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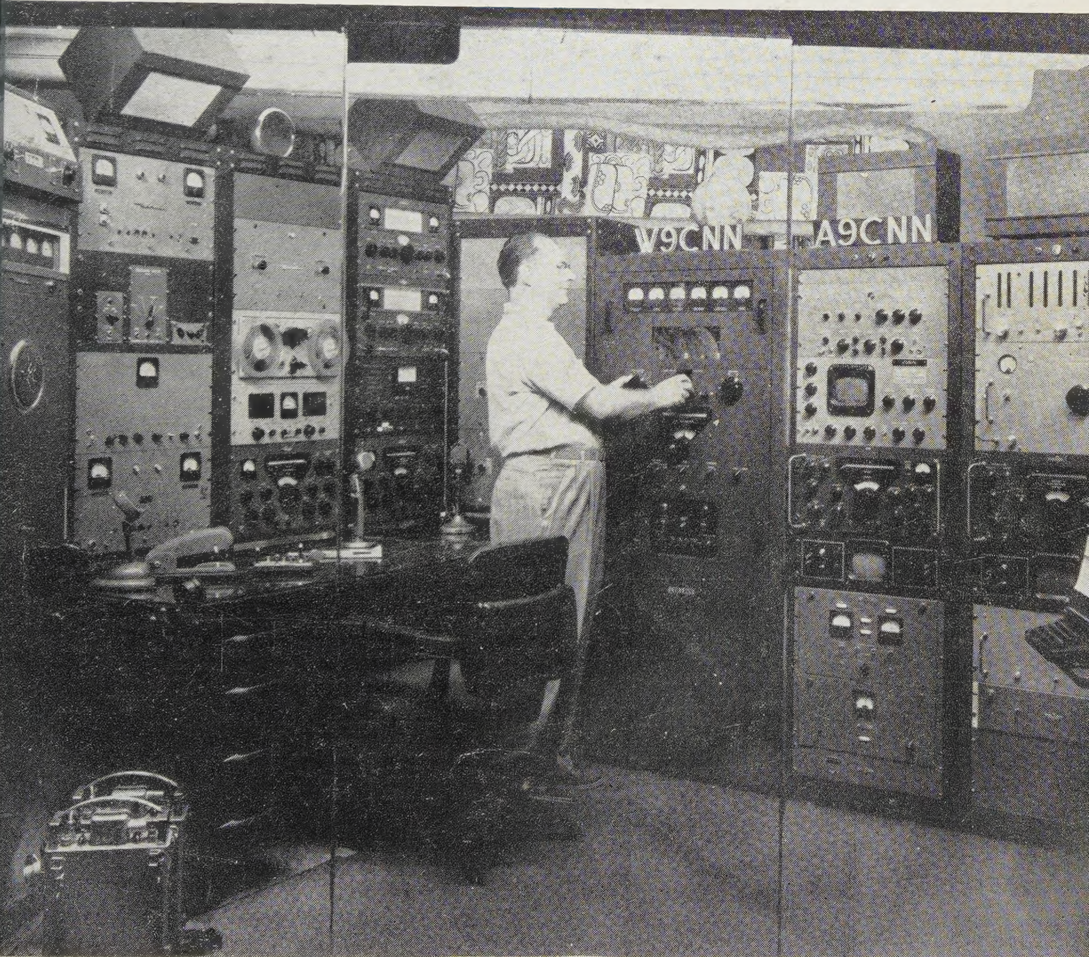
RADIO AMATEURS' JOURNAL

SEPTEMBER
1955
35c



THE "SHACK" AT W9CNN

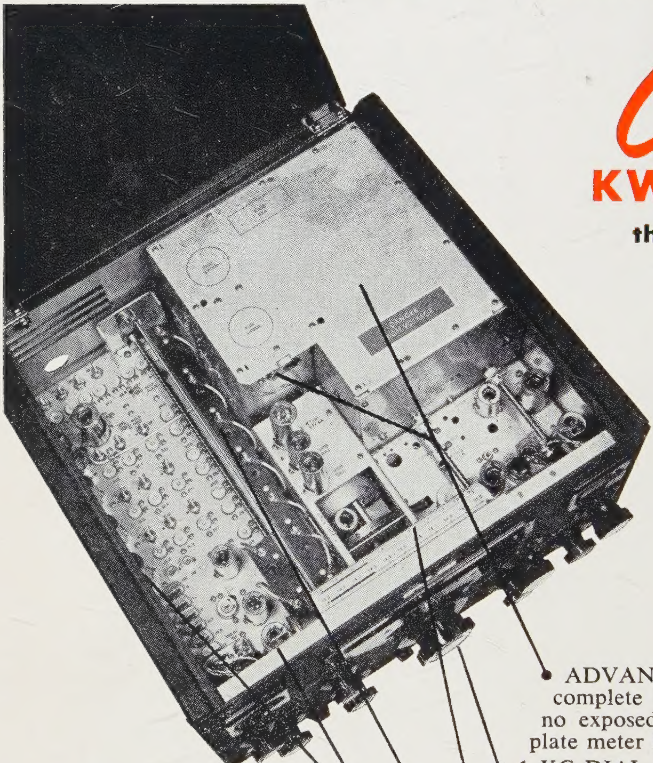
exclusive

in the Amateur Field . .

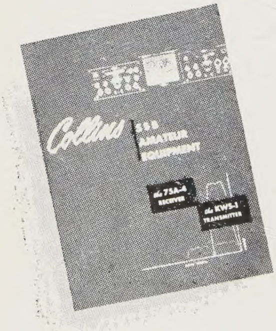
Collins

KWS-1 TRANSMITTE

the finest kilowatt in Amate
SSB history owes its fast-gro
ing reputation to featur
such as these—*exclusi*
with Collins:



- ADVANCED SAFETY MEASURES inclu complete interlocking of the high voltage circui no exposed high voltage in RF cabinet, and p plate meter in B— lead.
- 1 KC DIAL DIVISION on all bands — 80 throu 10 meters.
- SPECIAL SIDEBAND GENERATION utilizing M chanical Filters provides 60 db sideband suppression.
- PERMEABILITY TUNED CIRCUITS allow effect spurious suppression.
- DUAL CONVERSION, with stability comparable to famous 75A Receivers, makes the KWS-1 as stable on meters as it is on 80.
- UNPRECEDENTED COMPACTNESS with all controls nec sary for tuning and operating in one receiver-size cabinet.
- NO P.A. BANDSWITCH. Network for continuous tuning fr 3.5 to 30 mc with constant L/C ratio over entire range.



Write or visit your nearest Collins distributor for complete information on Collins new SSB Amateur line, and ask for your copy of this latest brochure.

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

COLLINS

LAST YEAR'S WINNER. Benjamin S. Hamilton, W6VFT, is congratulated by Val Peterson, right, Administrator, Federal Civil Defense Administration. J. Milton Lang, general manager of the G-E Tube Department, looks on.

NOMINATIONS NOW OPEN FOR 1955 EDISON AWARD

The Fourth Annual Edison Radio Amateur Award will give you an opportunity to recommend for high honors an amateur who has rendered important public service.

Handsome trophy, a $500 check, and coast-to-coast recognition await the 1955 winner. The panel of judges will consider only candidates nominated by letters from you and others.

Start now to make your selection and assemble the facts for your nominating letter. Read the Award Rules at right!

Radio amateurs and their friends are generous in acclaiming accomplishment. No better means for this exists than for you to name . . . soon . . . a candidate for the Edison Award.

Send your letter to *Edison Award Committee, General Electric Company, Tube Department, Schenectady 5, N. Y.*

RULES OF THE AWARD

WHO IS ELIGIBLE. Any man or woman holding a radio amateur's license issued by the F.C.C., Washington, D.C., who in 1955 performed a meritorious public service in behalf of an individual or group. The service must have been performed while the candidate was pursuing his hobby as an amateur within the continental limits of the United States.

WINNER OF THE AWARD will receive the Edison trophy in a public ceremony in a centrally located metropolitan city. Expenses of his trip to that city will be paid.

$500 GIFT. Winner will be presented with a check for this amount in recognition of the public service he has rendered.

WHO CAN NOMINATE. Any individual, club, or association familiar with the service performed.

HOW TO NOMINATE. Include in a letter the candidate's name, address, call letters, and a full description of the service performed. Your letter must be postmarked not later than January 2, 1956.

BASIS FOR JUDGING. All entries will be reviewed by a group of distinguished and impartial judges. Their decisions will be based on (1) the greatest benefit to an individual or group, (2) the amount of ingenuity and sacrifice displayed in performing the service. The judges will be:

E. ROLAND HARRIMAN, President, The American Red Cross.

HERBERT HOOVER, JR., The Under Secretary, U. S. Department of State.

EDWARD M. WEBSTER, Commissioner, Federal Communications Commission.

GOODWIN L. DOSLAND, President, American Radio Relay League.

Winner of the Award will be announced on or before Thomas A. Edison's birthday, February 11, 1956.

Employees of the General Electric Company may nominate candidates for the Edison Radio Amateur Award, but are not permitted to receive the Award.

GENERAL ELECTRIC

166-185

2 *DX Bands!*
with the
mosley
"Ten-Twenty"

TRUE BEAM PERFORMANCE on both 10 and 20 Meters . . . and all you do is change bands *at the transmitter!*

Two *peak-pretuned* 3 element beams, interlace mounted on one boom, give you real DX action! The Exclusive *Auto-Lectronic* Coupling —that permits feeding *both* beams with just one coax line—means Unequalled operating convenience! The story, below, will tell you why Your Best Beam Buy ... is the New "Ten Twenty"!

SPECIFICATIONS and DATA — Model VPA-1020

Forward Gain (over full size dipole): 7.5db.

Front-to-Back Ratio: 28db.

S W R: 1.5/1, or better, at resonant frequencies.

(Performance data essentially the same for both ten and twenty meter operation.)

Elements: 61ST6 Tubular Aluminum. Maximum length, 22½'.

Boom: 1½" OD 61ST6 Aluminum. 12' long.

Wind Surface Area: 11.4 sq. ft.

Wind Load: 228 lbs.

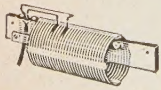
Weight (Assembled): 57 lbs.

Tuning: FACTORY PRETUNED to three resonant frequencies in each band. Drilled and color coded element sections.

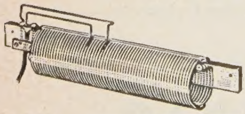
Model VPA–1020, complete with "V–P" Coils, Auto-Lectronic Coupling Yoke, all necessary hardware and full instructions. Less mast, rotor and coax line.
AMATEUR NET PRICE $120.79

New! Mosley Loading Coils
for 40, 75 & 80 Meter
'Vest Pocket' Dipoles

Not enough space for a "long wire"? — Here's the answer! Use a MOSLEY 'V-P' Dipole Loading Coil to make a high performance dipole antenna at about one-half the length of a full size dipole. Just one coil needed for each antenna. Use 52 or 75 ohm coax.



Model No. 40-D
40 Meter Coil
Net Price $7.95



Model No. 75/80-D
75 or 80 Meter Coil
Net Price $7.95

Every MOSLEY Product Advertised ...
... is AVAILABLE *NOW!*

Mosley manufacturing and shipping facilities are being constantly expanded to keep pace with the ever-increasing demand for popular "Vest Pocket" Rotary Beam Antennas and other Mosley Amateur equipment.

Every Mosley product advertised is *in production* and readily available through your Ham Equipment Supplier.

Mosley Electronics, Inc

8622 ST. CHARLES ROCK ROAD, ST. LOUIS 14, MISSOURI

CQ, The Radio Amateurs' Journal

September 1955
Vol. 11, No. 9

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New HEATHKIT DX-100 PHONE AND CW TRANSMITTER KIT

MODEL DX-100

Shpg. Wt. 120 lbs.

$189.50

Shipped motor freight unless otherwise specified. $50.00 deposit with C.O.D. orders.

- R.F. output 100 watts Phone, 125 watts CW.
- Built-in VFO, modulator, power supplies. Kit includes all components, tubes, cabinet and detailed construction manual.
- Crystal or VFO operation (crystals not included with kit).
- Pi network output, matches 50-600 ohms non-reactive load. Reduces harmonic output.
- Treated for TVI suppression by extensive shielding and filtering.
- Single knob bandswitching, 160 meters through 10 meters.
- Pre-punched chassis, well illustrated construction manual, high quality components used throughout—sturdy mechanical assembly.

This modern-design Transmitter has its own VFO and plate-modulator built in to provide CW or phone operation from 160 meters through 10 meters. It is TVI suppressed, with all incoming and out-going circuits filtered, plenty of shielding, and strong metal cabinet with interlocking seams. Uses pi network interstage and output coupling. R.F. output 100 watts phone, ... 125 watts C W. Switch-selection of VFO or 4 crystals (crystals not included).

Incorporates high quality features not expected at this price level. Copper plated chassis—wide-spaced tuning capacitors — excellent quality components throughout—illuminated VFO dial and meter face—remote socket for connection of external switch or control of an external antenna relay. Preformed wiring harness—concentric control shafts. Plenty of step-by-step instructions and pictorial diagrams.

All power supplies built-in. Covers 160, 80, 40, 20, 15, 11 and 10 meters with single-knob bandswitching. Panel meter reads Driver I_P Final I_G, I_P, and E_P, and Modulator I_P. Uses 6AU6 VFO, 12BY7 Xtal osc.-buffer, 5763 driver, and parallel 6146 final. 12AX7 speech amp., 12BY7 driver, push-pull 1625 modulators. Power supplies use 5V4 low voltage rect., 6AL5 bias rect., 0A2 VFO voltage reg., (2) 5R4GY hi voltage rect., and 6AQ5 clamp tube. R.F. output to coax. connector. Overall dimensions 20⅞″ W x 13¾″ H x 16″ D.

Heathkit ANTENNA COUPLER KIT

Poor matching allows valuable communications energy to be lost. The Model AC-1 will properly match your low power transmitter to an end-fed long wire antenna. Also attenuates signals above 36 Mc, reducing TVI. 52 ohm coax. input—power up to 75 watts—10 through 80 meters—tapped inductor and variable condenser—neon RF indicator—copper plated chassis and high quality components.

MODEL AC-1

$14.50 Shpg. Wt. 4 lbs.

Heathkit GRID DIP METER KIT

MODEL GD-1B

$19.50 Ship. Wt. 4 lbs.

The invaluable instrument for all Hams. Numerous applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, design procedures, etc. Receiver applications include measuring C, L and Q of components—determining RF circuit resonant frequencies.

Covers 80, 40, 20, 11, 10, 6, 2, and 1¼ meter Ham bands. Complete frequency coverage from 2—250 Mc, using ready-wound plug-in coils provided with the kit. Accessory coil kit, Part 341-A at $3.00 extends low frequency range to 350 Kc. Dial correlation curves furnished.

Compact construction, one hand operation, AC transformer operated, variable sensitivity control, thumb wheel drive, and direct reading calibrations. Precalibrated dial with additional blank dials for individual calibration. You'll like the ready convenience and smart appearance of this kit with its baked enamel panel and crackle finish cabinet.

Heathkit ANTENNA IMPEDANCE METER KIT

MODEL AM-1

$14.50 Shpg. Wt. 2 lbs.

Use the Model AM-1 in conjunction with a signal source for measuring antenna impedance, line matching purposes, adjustment of beam and mobile antennas, and to insure proper impedance match for optimum overall system operation. Will double, also, as a phone monitor or relative field strength indicator.

100 µa. meter employed. Covers the range from 0 to to 600 ohms. Cabinet is only 7″ long, 2½″ wide, and 3¼″ deep. An instrument of many uses for the amateur.

HEATH COMPANY

A SUBSIDIARY OF DAYSTROM, INC.

BENTON HARBOR 12, MICHIGAN

New *Heathkit* VFO KIT

MODEL VF-1

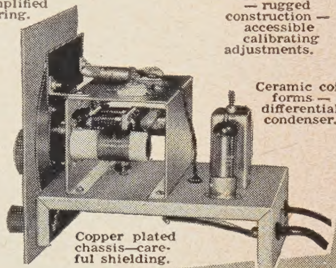
$19.50

Ship. Wt. 7 lbs.

- **Smooth acting illuminated and precalibrated dial.**
- **6AU6 electron coupled Clapp oscillator and OA2 voltage regulator.**
- **10 Volt average output on fundamental frequencies.**
- **7 Band calibration, 160 through 10 meters, from 3 basic oscillator frequencies.**

Here is the new Heathkit VFO you have been waiting for. The perfect companion to the Heathkit Model AT-1 Transmitter. It has sufficient output to drive any multi-stage transmitter of modern design. A terrific combination of outstanding features at a low kit price. Good mechanical and electrical design insures operating stability. Coils are wound on heavy duty ceramic forms, using Litz or double cellulose wire coated with polystyrene cement. Variable capacitor is of differential type construction, especially designed for maximum bandspread and features ceramic insulation and double bearings.

This kit is furnished with a carefully precalibrated dial which provides well over two feet of calibrated dial scale. Smooth acting vernier reduction drive insures easy tuning and zero beating. Power requirements 6.3 volts AC at .45 amperes and 250 volts DC at 15 mills. Just plug it into the power receptacle provided on the rear of the AT-1 Transmitter Kit. The VFO coaxial output cable terminates in plastic plug to fit standard ½" crystal holder. Construction is simple and wiring is easy.


Open layout,—easy to build — simplified wiring.
Smooth acting illuminated dial drive.
Clean appearance — rugged construction — accessible calibrating adjustments.
Ceramic coil forms — differential condenser.
Copper plated chassis—careful shielding.

Heathkit AMATEUR TRANSMITTER KIT

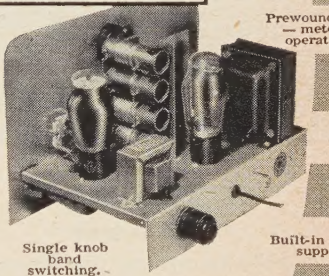
MODEL AT-1

$29.50

Ship. Wt. 16 lbs.

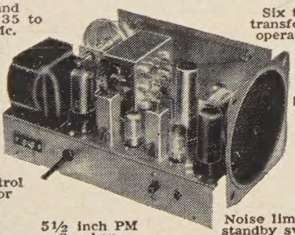
SPECIFICATIONS:

Range 80, 40, 20, 15, 11, 10 meters.
6AG7 ....Oscillator-multiplier.
6L6 ....Amplifier-doubler
5U4G ....Rectifier.
105-125 Volt A.C. 50-60 cycles 100 watts. Size: 8⅛ inch high x 13⅛ inch wide x 7 inch deep.


Crystal or VFO excitation.
Prewound coils — metered operation.
Rugged, clean construction.
52 ohm coaxial output.
Single knob band switching.
Built-in power supply.

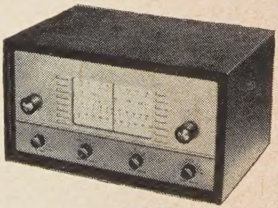
Here is a major Heathkit addition to the Ham radio field, the AT-1 Transmitter Kit, incorporaring many desirable design features at the lowest possible dollar-per-watts price. Panel mounted crystal socket, stand-by switch, key click filter, A. C. line filtering, good shielding, etc. VFO or crystal excitation—up to 35 watts input. Built-in power supply provides 425 volts at 100 MA. Amazingly low kit price includes all circuit components, tubes, cabinet, punched chassis, and detailed construction manual.

Heathkit COMMUNICATIONS RECEIVER KIT


Four band operation 535 to to 35 Mc.
Six tube transformer operation.
Stable BFO oscillator circuit.
Electrical bandspread and scale.
RF gain control with AVC or MVC.
5½ inch PM Speaker-Headphone Jack.
Noise limiter—standby switch.

SPECIFICATIONS:

Range..........535 Kc to 35 Mc
12BE6 ....Mixer-oscillator
12BA6 ....I. F. Amplifier
12AV6 Detector—AVC—audio
12BA6 ....B. F. O. oscillator
12A6........Beam power output
5Y3GT ....Rectifier
105-125 volts A. C. 50-60 cycles, 45 watts.



A new Heathkit AR-2 communications receiver. The ideal companion piece for the AT-1 Transmitter. Electrical bandspread scale for tuning and logging convenience. High gain miniature tubes and IF transformers for high sensitivity and good signal to noise ratio. Construct your own Communications Receiver at a very substantial saving. Supplied with all tubes, punched and formed sheet metal parts, speaker, circuit components, and detailed step-by-step construction manual.

MODEL AR-2

$25.50

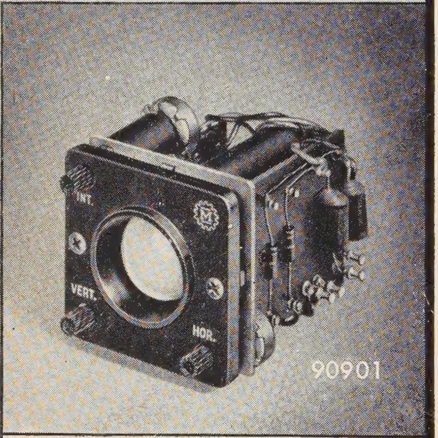
Ship. Wt. 12 lbs.

CABINET:

Proxylin impregnated fabric covered plywood cabinet. Shipg. weight 5 lbs. Number 91-10, $4.50.

HEATH COMPANY
BENTON HARBOR 12, MICHIGAN

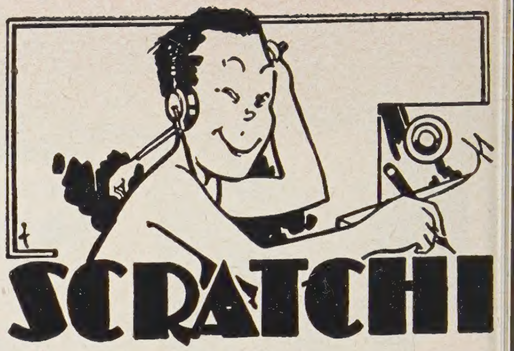
Designed for Application



The No. 90901
One Inch
Instrumentation Oscilloscope

Miniaturized, packaged panel mounting cathode ray oscilloscope designed for use in instrumentation in place of the conventional "pointer type" moving coil meters uses the 1″ 1CP1 tube. Panel bezel matches in size and type the standard 2″ square meters. Magnitude, phase displacement, wave shape, etc. are constantly visible on scope screen.

JAMES MILLEN
MFG. CO., INC.
MAIN OFFICE AND FACTORY
MALDEN
MASSACHUSETTS



SCRATCHI

Feenix, Ariz

Deer Hon. Ed:

Getting reddy to up the cirkyoulayshun figures on acct. of shortly you will be selling more copies of your Hon. Mag than you can printing. Yes indeedy, good old relyeable Scratchi are having done it again. And when I say I are doing it again, I meening I are doing sumthing like I having never done before.

I are just inventing sumthing so fablus tha it is . . . when you heer about you will think i is . . . Hackensake! ! I running out of word to describing Scratchi's new invenshun. Howsumever, I'll betting that in five yeers amachoors will be putting up big statyou of me Not only that, maybe they be making movi of life of Hon. Hashafisti Scratchi. Who ca telling, maybe even riting song abouts me.

Hah! who is this fellers Davy Crockits Shortly peeples will be singing "Scratchi, Geenyus Scratchi, King of the Rotary Beem Scratchi, Geenyus Scratchi, coming up wit such a Skeem." Hey, that not bad for firs verse. Now if I can thinking of another verse . . . Oh! excoosing me, Hon. Ed. Back t business and letting you in on 1/c invenshun

How would you liking to having rotar beem what working on all bands and havin same gain on all bands? With bandchang being made with twist of rist on small nob Having reel peechy gain but working in a direckshuns at wunce? Which not being unsitely on acct. are reel small? Which keepin XYL or OW happy all times because rotar beem are also sprinkling lawn when bein used? Well, that is the invenshun. Scratchi HFS antenna—High Freakwency Squirter.

Funny idea is that Scratchi having invenshun just coming to him like lite bulb bein turned on. You seeing I being out in yarc looking at old rotary beem. I trying to figur out way to cooling it, on acct. my Arizon Kilowhat putting out so much power that m copper tubing rotary beem are starting to anneal and get reel soft.

I thinking that if I piping up water int tubing, that doing trick. If doing that, howsumever, then water coming out ends of tubing This changing frequency slitely . . . and ri

NOW... MODEL SX-100
SELECTABLE SIDE BAND RECEIVER
BUILT TO THE SPECIFICATIONS OF 1,000,000 FIELD EXPERTS
See it at Your Jobber—only $295⁰⁰

Hallicrafters 22 years of production know-how, the engineering experience of developing over 100 different major receiver designs, plus the advice of over 1,000,000 field experts operating Hallicrafters receivers all are combined to bring you this outstanding new receiver—the SX-100! Hallicrafters alone, long recognized as the leading designer and manufacturer of quality communications equipment, can offer you the dependability and performance of this great new SX-100 at the amazingly low price of just $295.00.

Look at these features you enjoy with the SX-100 . . . before, they were available only on receivers costing a great deal more!

1. SELECTABLE SIDE BAND OPERATION.
2. "TEE-NOTCH" FILTER—This new development provides a stable non-regenerative system for the rejection of unwanted hetrodyne. The "Tee-Notch" also produces an effective steepening of the already excellent 50 KC i.f. pass band (made famous in the SX-96) and further increases the effectiveness of the advanced exalted carrier type reception.
3. NOTCH DEPTH CONTROL for maximum null adjustment.
4. ANTENNA TRIMMER.
5. PLUG IN LABORATORY TYPE EVACUATED 100 KC QUARTZ CRYSTAL CALIBRATOR—included in price.
6. LOGGING DIALS FOR BOTH TUNING CONTROLS.
7. FULL PRECISION GEAR DRIVE DIAL SYSTEM.
8. SECOND CONVERSION OSCILLATOR CRYSTAL CONTROLLED—greater stability through crystal control and additional temperature compensation of high frequency oscillator circuits.

Controls

Pitch Control
Reception
Standby
Phone Jack
Response control (upper and lower side band selector)
Antenna Trimmer
Notch Frequency
Notch depth
Calibrator on/off
Sensitivity
Band Selector
Volume
Tuning
AVC on/off
Noise limiter on/off
Bandspread
Selectivity

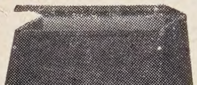
hallicrafters

CHICAGO 24, ILLINOIS

Model SX-100. *Amateur Net* $295.00
Matching R-46B Speaker $17.95
***Frequency Range* 538kc-1580 kc**
1720 kc-34 mc

the NEW LOOK in BUD PRODUCTS and new sizes, too!

If you take pride in the appearance of your rig, get acquainted with the new look in Bud products and new sizes too!



SLOPING PANEL CABINETS

Now Bud offers 9 sizes of Sloping Panel Cabinets so there is sure to be a size to fit your need. In addition, there are quality bonuses like the EXCLUSIVE BUD HINGED TOP PROVIDING EASY ACCESS TO COMPONENTS . . . and there's more you can have LIGHT GREY HAMMERED FINISH AT NO EXTRA COST.

Catalog No.	Height	Width	Depth	Amateur Net
C-1584	6½	7-1/16″	7-5/16″	$3.30
C-1585	6½	9-1/16″	7-5/16″	3.75
C-1586	6½	11-1/16″	7-5/16″	4.15
C-1587	8″	8-1/16″	8″	3.99
C-1588	8″	10-1/16″	8″	4.41
C-1892	8″	13-1/16″	8½	4.99
C-1893	10″	18-1/16″	10½″	6.99
C-1894	8″	14-1/16″	8″	4.79
C-1896	9″	18-1/16″	8⅓″	6.84

TELEPHONE TYPE RELAY RACKS

Five sizes of these sturdy racks are now available for your convenience. NOW ALL STANDARD RELAY RACKS MAY BE OBTAINED IN LIGHT GREY HAMMERED FINISH WITHOUT EXTRA CHARGE.

Catalog No.	Height	Panel Space	Amateur Net
RR-1263	35½″	31½″x19″	$18.48
RR-1363	38¾″	36¾″x19″	18.90
RR-1264	70½″	66½″x19″	21.06
RR-1364	73¾″	71¾″x19″	22.05
RR-1366	81-7/64″	77″ x19″	26.34

BUD THE MARK OF PERFECTION

BUD RADIO, Inc.

Dept. C

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here idea are striking me. Wowiee! ! H are the reel lowdown, so keeping under H Sombrero until I getting patent.

Considering I putting lawn sprinkler on of pole. Keeping lawn sprinkler arms stra though, not bent. Next, putting anot sprinkler in front and another sprinkler back, and connecking them together, so th looking like three-element rotary beem w reel, reel short elements.

Now, if I pumping water thru pipe i center sprinkler, water shooting out all places. Where water shooting is where hav beem elements. The water is the element w is radiating. To making 6-meters beem, lett shoot out abouts ten feets. For 10-met beem, shoot out water abouts 16 feets, and on. I fixing up pump so being driven by va ble speed motor, and by turning dial can cha ing distance water is squirted, and so chang band beem is working on.

No, Hon. Ed., don't getting in tizzy. Scrat are knowing that regular water won't wo ing. But salt water is good conductor, s merely using salt water insted of regular wa

So, can having nice fixed three-elem beem. How about rotating it? Easy. Just b sprinkler arms a little bit, and zingo! ! be are rotating like sixty. As it rotating, it se ing signal to all parts of world. One li problem, of course. Having to getting it tating fast enough so that even reel fast c on see-w are covering world in all direckshu

Aren't that a world-beeter, a reel jim-crac dandy? Remembering, Hon. Ed., mums word until are getting model bilt and pa filed. (Forgetting about grass growing— membering salt waters n.g. for grass—but figuring out sumthing to keeping XYL happ

Respectively yours,
Hashafisti Scratchi

Egyptian Hamboree

(*Illinois Div.*)

The Egyptian Radio Club holds its ann Hamboree Sept. 25, 1955, at 700 S. Chou Road, Granite City, Illinois. Special attenda prizes will be awarded to out-of-town guests.

Southwestern Division Conventi

The San Diego Council of Amateur Radio ganizations sponsors the 1955 Southwestern vision Convention in San Diego, October 1 an Preconvention activities will be held at the Ma Hotel Friday evening, Sept. 30. The Conven will utilize the famous exposition facilities of boa Park, with a program including mobile miscellaneous contests, transmitter hunts, exhi open forum, technical talks, VHF roundup, YL activities, DX confab and other events.

A Banquet, entertainment and dance will held Saturday evening. For advance registra and information write general chairman W6W 2052 Venice St., San Diego 7, Calif.

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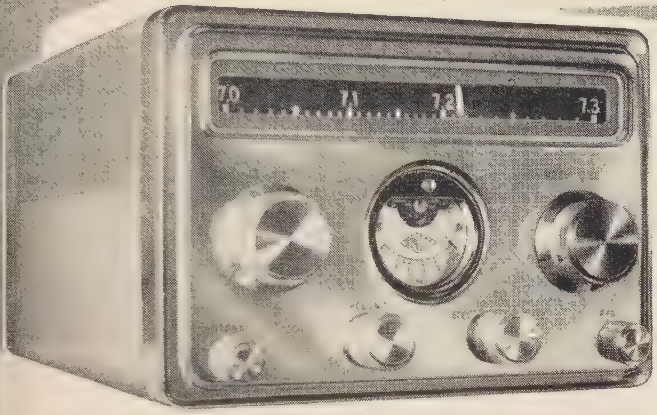

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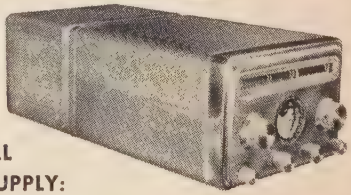

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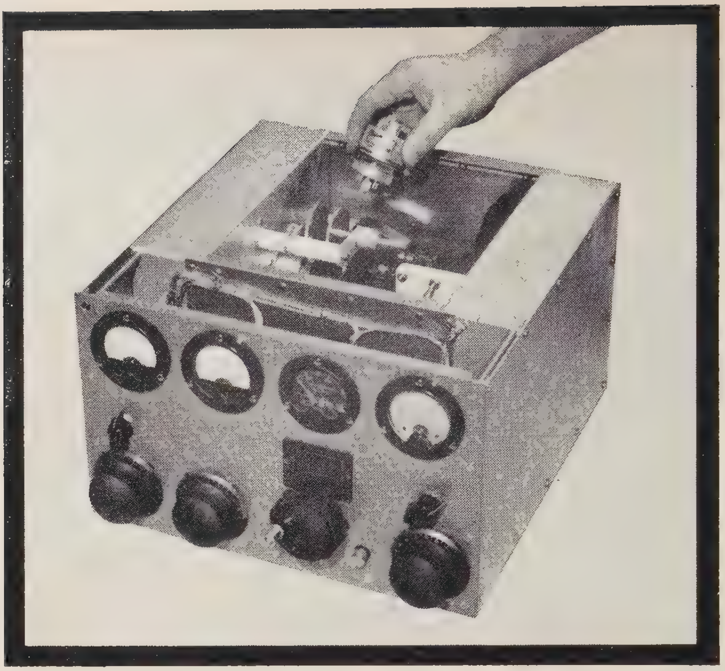

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(Frequencies to 175mc per tube)

	Class-C CW or FM Phone	Class AB_1 RF Linear
D-C Plate Voltage	2000v	2000v
D-C Screen Voltage	250v	350v
D-C Grid Voltage	−90v	−50v
D-C Plate Current	250ma	250ma*
Zero Sig D-C Plate Current	— —	100ma
D-C Screen Current	25ma	15ma*
Peak RF Grid Voltage	115v	50v*
Driving Power	2.8w	0w
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Plate Power Output	410w	325w*

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guest editorial . . .

. . . de K2ORS

Jean Shepherd, K2ORS (ex-W9QWN, -W8QWN,-W3STE), one of the most erudite network personalities here discusses some of the Grand Olde Dayes of Ham Radio. Jean may be heard on most Mutual Network stations daily from 12:10 to 12:30 p.m. EDT, and in New York from 5:30 to 5:45 p.m. weekdays, Saturdays 3:00 to 6:00 p.m. on WOR (check local sked for Sat. network show).

For the past twenty years or so I have been ading and digesting intellectually everything ave been able to lay my hands on pertaining ham radio and the allied arts. This goes back the days when "high fidelity" was a term ed to describe a man who was either well arried or too old to care one way or the er. Hugo Gernsback was a sort of Bernarr cFadden of the self-taught-engineer school basement fuse-blower. Probably even a few you with us today wrote letters beginning:

> "Dear Hugo (Ed.): Pertaining to the circuit diagram on page 39 of the Aug. issue (*Short Wave Craft,* Vol. IV, pp 39) of 'The Two Tube Doerle DX-2.' I find that when R5 is changed from 5,000 ohms to 500,000 ohms, the 'DX-2' regenerates nicely, but when I go back to 5,000 ohms as given in your diagram all I get is a hum in the phones. Otherwise I think your magazine is great and I especially like the SWL corner. Why not have more fiction like 'The SOS Boys At the Seashore' (Mar. *SWC*)? All my friends thought that was one of the best stories they had ever read. So did I. . . ."

On second thought, M. Gernsback was a t of Tom Swift-type who never seemed to ther with technical niceties but was more olved with the grandiose sweep of imagina- n. I wouldn't have been surprised if he had gun an article with "Bless My Buttons, Tom, t you'll just have to wait until I finish the ctric Rifle before you plan a big game trip." ate it up. I remember one gem in particu- that appeared in the "Letters to the Ed." artment of *Short Wave Craft* during those cyon days. It seems that the guy had been rrying about getting his technical terms ight and he felt he had something big by tail.

> "Dear Ed.: I have been reading about 'hand-capacity' in your articles for a long time now and it has been bothering me. I have never been able to find out just how 'hand-capacity' is measured even in our local library, which has all the back issues. I suggest that some standard be set up to measure this phenomenon. For example, use a size 8 hand (*Sears Roebuck* Standard), Male, held one inch from an ungrounded aluminum panel to denote hand-capacity of *ONE HAND*. We could figure fractions of that by using one or two *FINGS* . . . (short for finger). Of course, I know that there are lots of details to be figured out on setting up a standard of this sort, but why not put it up to the rest of the gang?"

This is not an exact quote but I wish it were. The Letter really did appear and it caused quite a technical brouhaha before the storm subsided. If any of you ex-winders-of-tickler-coils have a rare copy of one of the numbers of *SWC* containing some of the correspondence pertaining to "The Hand-Capacity Issue," I would mightily enjoy owning it. In fact, I have a mint-conditioned pair of 2A5's which I would gladly swap for a readable copy. They make fine modulators for the new carbon plate 210.

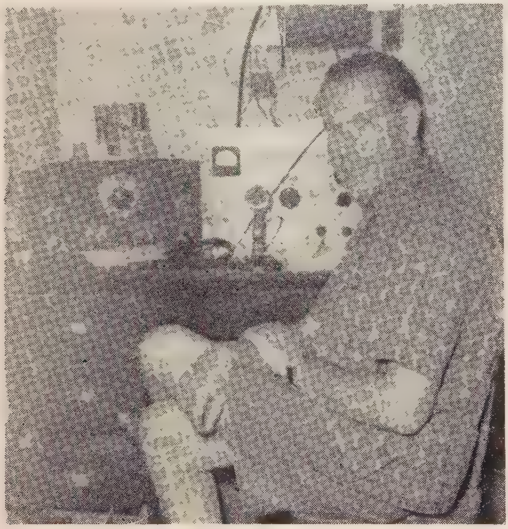
Then who can forget the *sturm und drang* that roared for months when the first beam power tubes hit the market? Beam Power was to the radio business for a while what Chlorophyll was to the Wallflower Trade a few months back. Only more so. The first articles I can remember about them promised more power and glory to the lucky user of a pair of 6L6's than an ad for a Buick Roadmaster does today. And with about the same fuchsia shaded prose. These articles made much of the "fact" that the beam power tubes didn't need to be neutralized. To a guy who had tried to neutralize a single 801 in the dark of the moon, this was a better deal than the one the Tasty Yeast Jesters offered teen-age girls suffering from acne. And we bit. I'll never forget the rig I built from one of those articles. Nor will the FCC. I worked ten guys the first fifteen minutes of operation before I found out that I didn't have a crystal plugged in. I was logged on 45 frequencies on 12 bands including one that was being used at the time by a champion flagpole sitter working a county fair in Kan-

[*Continued on page 115*]

. . . de W2NSD

NEVER SAY DIE

After talking to Bill Leonard, W2SKE, over the air for several years I finally met him in person at a gathering of the Radio Society of Bermuda. We had a wonderful time talking over all the Sweepstakes Contests in which we had rubbed elbows, complete with the head shaking as to ethics of some of the top scorers and mutual amusement over the claims of keeping under 100 watts input to a pair of 4-250A's by one or two of the section winners. Like nearly everyone else in Bermuda we were both vacationing.



Cy, VP9L

The shack at VP9L

I managed a week down there in betwee the production of the August and Septemb issues of *CQ*. A week sure runs short in Be muda. I went through all of the tourist routin though, taking pictures as I went: taxi to of the island, water skiing in the beautiful bl bay, Hydro-pack diving to look at the co and fish in the amazingly clear water with div Park Brecht (don't miss this if you get there shopping in Hamilton (famous for perfum Cashmere sweaters and whiskey), and a vi to the perfume factory. The nitery highligh were the Talbot Brothers, the Esso Steel Ba and the beautiful Sunken Gardens at t Bermudiana.

A few doors up from my hotel (The I verurie) I found VP9L, Cyril Lindley. operates mostly 15 and 20 meters so naturally tried to get a message through to m home in Brooklyn. After listening for a cou of days we finally heard a weak W2 comi through . . . W2NSH/mobile. Murray su puts out a walloping signal with that Elmac his. Part of this is explained when you und stand that Cy is using a vertical until he g his two-element 20 meter beam completed. tried again the next evening, heard K2C (Murray) pouring through and missed h when he suddenly turned everything off supper.

Sam (*CQ* VHF Department) made promise that I would check up on the meter activity down there so I looked VP9BM and paid him a visit. Jules is all to go on two meters with a rotating rhom 100 watts and a good looking home-made c verter. Since we shared an interest in s diving we set out in his boat for the reefs spent a couple of hours underwater, swimm around the coral and observing some re impressive fish. The water was about 30 deep at most and quite clear. There were of large Parrot fish, Rock fish, Grunts, Do fish, Angel fish, Hogfish, and even one th foot barracuda that we managed to appro

Jerry Wyner, W1PST, was on his ho moon with Genevieve, KN2OQK. Jerry been specializing in almost-going-on-exp tions lately and I hope that Genevieve chronicle his attempts for they certainly m an interesting story.

Ham radio is a true fraternity for every in Bermuda went way beyond the no bounds of courtesy to be hospitable. If happen to work any of them send them regards and tell them I hope to visit there again for it was a delightful trip.

$\sqrt[3]{38}$
W

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6AB4 Grounded grid input RF amp.
6CB6 2nd RF
6AU6 1st converter
6AG5 Oscillator
6BE6 2nd Converter and Oscil.
6BA6 IF Buffer Amp.

3-6BA6 IF Amplifiers
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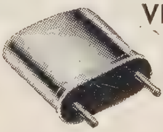

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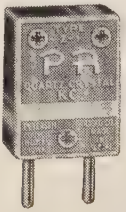

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ne Ham Club and the Law

Maurice J. Hindin, W6EUV
6399 Wilshire Blvd., Los Angeles 48, Calif.

ike the unbled filter condenser, the unin- porated radio club, typical among hams oughout the country, is potentially a source violent shock. The shock comes usually in form of a summons to appear in court to wer a legal action for damages. Once a ger is recognized we can take steps to pro- ourselves. The real trouble occurs when we not even aware that danger is present. As pointed out in previous articles, many ects of amateur radio have legal implica- s and the radio club is no exception.[1]

he amateur radio club usually takes one of e forms. The first is the small, neighbor- d group of hams who get together at non- eduled meetings, has no name, has no anization and undertakes no organized vity. The second type of club is a little e formal in organization. It may have reg- meetings, officers, a constitution or by- s, and plans for organized activity. The third he club which is qualified as a non-profit poration.

f your club is incorporated, you have al- ly reduced your individual potential liabil- o the legal minimum. Except for the casual sure you may get in seeing how wise you e been in forming or joining an incorporated , you do not have to read further. If, ever, you are a member of an unincor- ated club of either the first or second type ribed above, read on. It may save you lots of money in legal fees, court costs, and possible damage judgments.

The Danger

Most of us have been brought up to recognize that if we commit some negligent, careless, or foolish act, we are legally responsible for its consequences. Few of us, however, relish the idea of having to pay for the negligence, carelessness, or foolishness of someone else. That is what we are faced with legally by membership in an unincorporated club. The legal theory involved has its origin in the liability aspects of common-law partnerships or joint ventures.[2] Without attempting to go into all of the ramifications of partnership or joint venture liability suffice to say, that the general law is that each partner, or joint venturer is personally liable and responsible legally for the acts and obligations of the whole partnership or joint venture. This is true regardless of whether or not you yourself made or committed the particular act in question, or whether the liability was incurred by a fellow partner or joint venturer.[3] The extent of the liability and particular variations of the general law vary from state to state. It is impossible in a short article, such as this, to analyze the problem in the light of the laws of each state. Suffice to say, there have been enough instances

[*Continued on page 101*]

deluged by letters, W6GEG writes a follow-up in self-defense . . .

More on Grounded Grid

Norman R. McLaughlin, W6G
4143 Muirfield Rd., Los Angeles 8, Cali

When "Grounded Grid Linears"[1] was written its intention was solely to point out the simplicity of grounded grid circuitry and show an example or two of practical circuits. The deluge of mail which followed suggests that more information on grounded grid is in order.

One of the principal questions about grounded grid is "How much drive is needed?" There is no absolute answer to this question due to variables of tubes and modes of linear operation. In commercial service, for example, a power gain on the order of four to one seems to be satisfactory. By power gain, here, is meant the ratio of power output to driving power in the final amplifier.

In amateur circles so low a ratio of drive to final output would hardly be popular. Amateurs using circuits and tubes such as shown in *Figure 1* are able to obtain a driver/final power gain of approximately 16. The overall gain of the 837 combination is a little better than 60 to one, but it must be remembered there are two grounded grid stages involved.

While actual measurements have not been made, 10A SSB exciters have more than adequate drive for the 837's. Most sidebanders f that 300 watts input to this final is readily tained with their exciter speech level set about 9 o'clock. Whether this setting res in five watts output is not certain, but it is c siderably under the 10 watts rated output the 10A.

In considering drive to grounded grid am fiers, it must be remembered that all the e drive power actually appears in the plate cir of the power amplifier as output power.[2] expressed another way, the power delivere the load (by a power amplifier) is the sum the powers delivered by the driver and amplifier, less any power from the driver might be absorbed in the grid circuit.[3]

Another question is "Can grounded grid used in CW and in AM?" The answer to of these is not only it can, but it is. In C poses no unusual problems. Any VFO cap of five or more watts output tied to the combination in *Figure 1* will work fine should drive the combination to about 300 w input. Keying, of course, would be acc plished in the VFO.

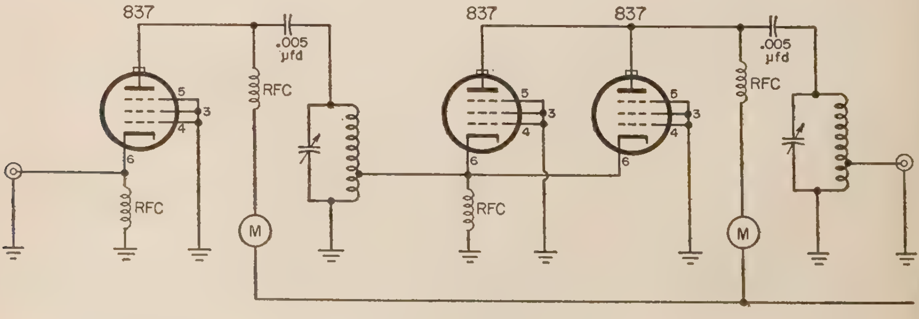
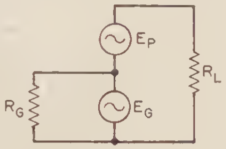


Fig. 1. The popular 837 G-G circuit.

In AM, matters are not quite so simple. If the final stage is to be modulated, the driver stage must be also. Peculiarly, to fully satisfy conditions of no distortion the final must be modulated 100%. To prevent distortion in the driver stage, the driver should be modulated only 60%. Obviously this is impractical, so in commercial operation a compromise of 80% modulation is applied to both driver and final.[2]

Using the 837's in Class B AM Linear is an interesting idea. For low power operators, such useage might provide a simple and convenient means of getting about 100 watts output. Since so little drive is required (between 5 and 10 watts) the modulated stage could very well be a low power transmitter. In Class B AM service these 837's have handled 300 watts input without showing color. Efficiency of 33 1/3 percent places the output at 100 watts, which might be a worthwhile increase from just 10 watts.



E_G = INPUT VOLTAGE
E_P = PLATE-CATHODE VOLTAGE
R_G = GRID LOSSES
R_L = PLATE LOAD

Fig. 2. G-G equivalent circuit.

"Will grounded grid work on the higher frequencies?" is still another oft-asked question. The answer is definitely *yes*. In fact, because grounded grid circuitry makes possible the use of tubes with high interelectrode capacities, it is found in the finals of most shortwave broadcast stations.

In grounded grid, tube capacities are seriesed rather than parallelled as in conventional circuitry. Consequently interelectrode capacity values found along with manufacturers' ratings do not apply. Because of this, broadcasters are able to make those huge 100-kilowatt bottles work on 15 megacycles and higher.

The efficiency of a driver and a grounded grid power amplifier can be somewhat higher than for an equivalent combination utilizing a normal amplifier circuit owing to improved efficiency in the output circuit. This results from lesser output capacities and also from the fact that there is no necessity to provide a load resistance to insure the stability of the driver since the latter is loaded by the output resistance of the final amplifier.[3]

As may be seen from the following, not only is the input impedance of a grounded grid amplifier quite low, but in the case of pentodes, inter electrode capacities are similarly small. Signal frequencies must become quite high before the shunting effects of the input capacity becomes objectionable.[4] Consequently, it would appear that Hoover and Peck worried needlessly about getting their very good final down on 10 and 15 meters.[5] A suitable tank circuit should be all that is required.

The input impedance of the grounded grid amplifier is arrived at by the formula in *Fig. 3.*[4] Effects of inter electrode capacities have been neglected.

$$Z_{in} = \frac{E_1}{I_p} = Z_k + \frac{Z_p + Z_L}{g_m(Z_p + 1)}$$

OR

$$Z_{in} = \frac{1}{g_m} = Z_k + \frac{Z_p + Z_L}{g_m(Z_p + 1)}$$

Fig. 3. G-G input impedance formula.

Loading grounded grid stages is a little different than loading conventional circuits. Since a-c plate current appears in the amplifier plate circuit when r-f drive is applied to the grid (cathode) circuit, means must be provided to tune the plate circuit to resonance, and to a certain extent adjust the loading before applying full plate voltage to the amplifier.[2]

This is because, from the driver viewpoint, the load presented becomes two resistors in parallel since the driver supplies the grid losses as well as the load with power.[2] This situation is illustrated in *Figure 2.*

Voltages mentioned as being common for 837's and 803's were subjects of considerable inquiry. While, compared to specification sheets, they appear to be extremely high no instances of tube failure through voltage breakdown have been heard of in over a year of grounded grid operation.

For 837's the answer seems to lie in the fact that at 12 watts rated plate dissipation it is grossly underrated. Comparison with 811's shows it to have a plate of comparable area. Its construction is similar, too, which suggests its ability to handle considerably higher voltages.

As for 803's, the 50% increased voltage applied only approximates the plate voltage it receives under high level plate modulation peaks. It is a rugged tube and two of them handle a kilowatt as though they were loafing, in SSB service.

It should go without saying that anyone running these voltages should tune up with reduced voltage. This is not only good judgment in grounded grid, but any other circuitry.

References:

1 Norman R. McLaughlin, Grounded Grid Linears, CQ, July 1955 p. 28
2 Geo. E. Sterling & Robt. B. Monroe, The Radio Manual, 4th Ed., p. 435
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Cadillac

Integrating the latest test data with hi-Q components for maximum mobile antenna efficiency

Mobile Antenna Perfection

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A recent article by Elbert Robberson, W2FRQ,* covered the theory and design of mobile antennas. This article was excellent, and timely, and should be carefully studied by those genuinely interested in improving mobile antenna performance.

The following material is being prepared with the objective in mind of supplementing the data furnished by Mr. Robberson. Theoretical aspects of this subject are being cast aside to make more room for practical and immediately useful information, a few do's and don'ts, and some specific "feet and inches" data. From Mr. Robberson's article you can secure an excellent understanding of what goes on. From the following you can, at once, build an antenna capable of doubling your effective radiated power without halving your pocketbook. It is being done every day. You need not be Albert Einstein to do it. From the data set forth in these two articles you can get something for nothing which "you can't hardly find no more."

Right here we sneak in the only theory you will find. Theoretically the mobile antenna is a ¼-wavelength vertical, a "Marconi," working against ground. At the lower frequencies, due to restricted height, inductance must be added somewhere, in some form, to cancel capacitive reactance and to make the system resonant. A 10′ vertical on a car will perform well at 4 megacyles, but this is not a happy solution. Bridges, trolley wires, tree limbs, and policemen take a dim view of your driving around with such an antenna. Obviously, then, the major limitation becomes mechanical at the outset.

A really good mobile antenna incorporates many design features which are not readily apparent—most of which have been learned the hard way. The mobile antenna is a complex machine. Visually it is sometimes difficult to tell a good one from a bad one. The little things you do not see count the most. There is unquestionably greater room for improvement in the mobile antenna than in any other branch of the antenna art.

In order to clearly understand why we want the mobile antenna improved it should be pointed out that the *average* mobile installation is limited to an input power of about fifty watts. It is neither simple nor inexpensive to attempt to exceed this input level due to limitations imposed by storage battery operation. The *doubling* of this fifty watt input level is practically out of the question unless you happen to own a bank. Many hundreds of dollars can be spent increasing input power in order to pick up the necessary 3 db. All of us, however, have experienced a time when the 3 db. would have pulled us out of the noise level and provided the difference needed for communication. This 3 db. you can get, without difficulty or expense, by improving your antenna.

Unfortunately, most amateurs lack the equipment necessary to follow through from formula to field strength measurement, from theory to perfection. Unlike most fixed station antennas, mobile system efficiency is controlled by a great many interlocking factors, both mechanical and electrical. These tend to separate the men from the boys. Even the best possible mobile antenna is hardly better than a poor compromise and is about equivalent to an extended tank circuit hanging outside the car. Losses can be overwhelming. Reduce or eliminate these losses and you win the daily double.

Optimum Height

Drawing on past experience, we come up with a fact and a starting point. Never put the corona ball more than 12′6″ above the ground. If this height is exceeded it will be but a short time until some low bridge or tree limb will conspire to make you very unhappy. Trolley lines, and there are still trolley lines, often are nearly this low and they carry 600 volts d.c. with copious amperes available. If ever you wheel into a town that has parallel trolley wires, and rubber tired cars, put the high mobile antenna in the trunk or head for the pasture. You've had it.

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*CQ May, 1955

Impact Strength

Impact strength of the system is important. This is particularly so if you are inclined to go around crashing into trees and the like. This calls for intelligent compromise. When the system is strengthened the weight goes up. When the weight and mass goes up, so does the wind resistance and inertia. You can meet yourself coming back in this program. There are those who have attempted "beefing up" an antenna to a point where crashing into bridges and trees at any speed would leave the antenna intact. Doubling vehicle speed squares the force of impact. The "beefing up" process can be carried to a point where, under impact, the antenna will remain on the fender to which it is attached, but the fender will come off the car. This, too, is the wrong approach.

Rigidity

Electrical considerations demand that the vertical be just that. It must be vertical. It must remain perpendicular to the ground, and the vehicle, at all times, and at all speeds. When it fails to do so, many undesirable things happen. The most noticeable of these is the changing of power input. Detuning, sometimes rapid in form, introduces reactance, shifting terminal impedance, increased transmission line SWR, fading of the signal, and the losses begin to mount. Absolutely no swing and sway, lean, wobble, or floundering around can be tolerated if you want to get the most for the least from your mobile antenna.

So now we know that we must make the thing stand straight up in the air. The only question is how to accomplish this. They do this sort of thing daily in the aviation industry not by "beefing up" and increasing weight and wind resistance, but by slimming down, using lighter materials, and by reinforcing only at strategic points. The place to start is at the base mount. This should be substantial and should be rigidly attached. It should also be adequately reinforced. Any motion at this point is multiplied many times at the corona ball. If you have a late model car, do not lean too hard against the fender while installing the base mount. The sheet metal now being used by car manufacturers is so thin you may fall through. Back up the base mount, behind the fender, with sufficiently substantial reinforcing to positively eliminate excessive flexing and sway.

Springs

The use of a spring in a mobile antenna is highly detrimental. Nothing will cause more loss, or electrical difficulty, than a spring, any spring, any kind, anywhere in the antenna, any time. The easiest way to reduce the effectiveness of your 50 watts to the level of a fair 15-watter is to use a spring. It is obviously not possible to keep the antenna perpendicular when one is used. A little wind resistance will cause the antenna to "lean." When you accelerate, decelerate, apply the brakes, or take a curve, the antenna will flounder around. Springs also "age," sometimes introduce varying amounts of inductance, and add to the loss resistance. They offer no protection against impact unless you happen to be moving slowly. They can destroy all you can otherwise gain by improvement. Take your choice. Either have a spring or an antenna. You cannot have both.

Position on Car

Before going on up the antenna, we should at this point establish the best location on the car to install the base. We have some latitude in this decision but it will be controlled somewhat by the type and design of the car, the type of equipment installed in the car, distance from the equipment to the antenna, your personal desire, and last but by no means least, the XYL's commands. If you really want that additional 3 db. you had better sell her first. That is, sell her on the idea. The rest is easy. It has been well established that, at least for 10-meter operation, the best location is on the left front fender a foot or so ahead of the car windshield. It has also been fairly well established that this same location is best for operation in the lower frequency bands. It has other advantages. It allows the use of a short transmission line, proper base elevation above ground, and the possibility of keeping the antenna clear of car structure and body contours. The next best location is on the rear deck, above the trunk lid, and on the left side of the car. This also provides proper base elevation. The first location is the only good location if you have a station wagon.

Height of Elements

In any case the base mount should be installed at an elevation of about 36″ from the ground. Unless you have mighty high bumpers this eliminates bumper mounts. The elimination of bumper mounting also eliminates much undesirable antenna directivity and pattern distortion. By mounting the base at the 36″ level, using a 36″ standard base support rod, a loading coil, and a standard 60″ top whiprod the coil is about halfway up the antenna from ground and is where it should be electrically. As mentioned earlier we are looking for the best possible compromise and this is it. If you have read the article by W2FRQ, you know that if radiation resistance and loss resistance are equal you are throwing away half the antenna power. All we are attempting to do is to reduce the loss resistance to the lowest possible value and increase the radiation resistance to a high value. This you do not do by correcting any single error in design but rather by doing the right and proven thing at each point. The basic antenna design is that described in this paragraph but don't let that fool you. The details of design control the payoff.

Re-inforcement

It has been stated earlier that the base mount should be adequately backed up with substantial reinforcing. Not only is this essential from a structural standpoint, but it is also necessary in order that a good low resistance ground termination may be had. The sheet metal sections of a car are rarely bonded together electrically in a manner providing good low resistance continuity. This backing plate therefore, serves two purposes. It supports the base mount so that sway of the antenna is eliminated and it also aids in fixing an adequate ground of low resistance. It should be bonded directly to the car frame with heavy braid or flexible cable. The necessity for doing this cannot be emphasized too strongly.

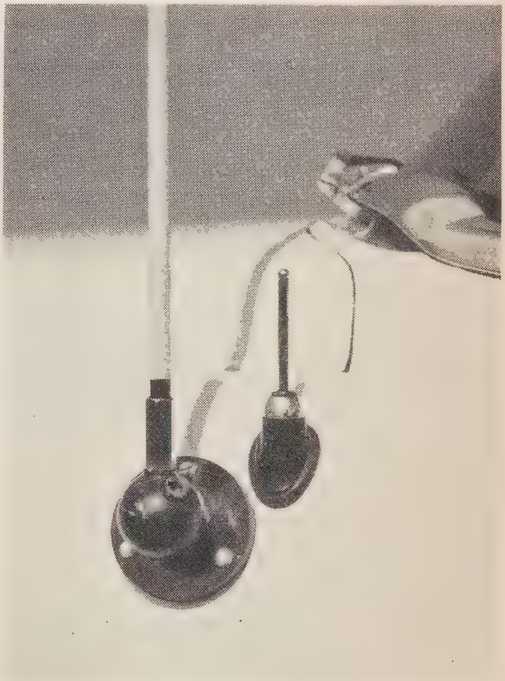
Base mounts with coax terminations built in are attractive, but should be avoided. They are a source of great trouble in that through constant motion and vibration, they eventually work loose and cause intermittent operation. When this occurs, they begin to build up high resistance through contact corrosion, and losses skyrocket. If, for some reason, they must be used, it is suggested that they be modified to include a machined insulating tube around the female connector capable of furnishing constant pressure thus prolonging the period of usefulness before the two parts loosen and corrode. There is no substitute for a well-soldered connection.

Loading Coil

This brings us to the meat in the nut in mobile antenna design which is the loading coil. All of the before-mentioned factors can be perfected to a high degree, but if very great care and attention is not paid to the loading coil, nothing will have been accomplished. It has been truthfully said that right here the success or mediocrity of the mobile antenna is determined. In coil design and construction there is considerably more than meets the eye. It is, in fact, quite impossible to visually inspect a coil and guess correctly what its efficiency is. One little design defect at this point can turn the 50-watt transmitter into a poor 25-watt one. A single, seemingly unimportant correction can readily double its effective power.

Q

Fundamentally, we must have a loading coil of the highest possible Q with the smallest possible physical dimensions. This is a big order, but we obviously cannot stand a large coil because of weight and wind resistance again building up the sway and lean. We must have very high Q in order to insure lowest possible loss resistance. Careful design consideration and intelligent selection of the best compromise is in order. Other considerations also are present. A mobile antenna, for example, that is a "fair weather" device only, is not too desirable. The only answer to this problem is sealing the entire loading coil in some manner so that in the rain there is no change in dielectric or conductor diameter, which in turn would cause detuning. This means, of course, complete sealing of the hermetic variety and not simply surrounding the coil with shields that breathe, leak, sweat, or just look good. What self-respecting amateur would subject his final amplifier tank circuit to rain, dust, and varying humidity in saturated salt spray and expect it to remain efficiently in tune while swinging across the countryside over varying earth conditions? In a measure this antenna loading coil is also a delicately balanced tank circuit, must be well protected, and should be treated with respect. You can pick up 3 db. or more by doing so.



For maximum Q: Base 36" high, no spring. Shown is best location for omnidirectional field.

Form Factor

Time and effort spent in designing a really efficient loading coil will pay off handsomely. Form factor must be taken into consideration along with proper mechanical support and many other things. An "air-wound" coil is always preferable to one supported by a solid dielectric. The largest possible wire diameter should be employed consistent with practicability of the finished product, the power level involved, and the frequency of operation. It is, for example, useless to end up with a coil having definitely superior electrical qualities if this coil is so huge as to cause excessive wind resistance and have such weight that the antenna supports will not carry it.

Good compromise calls for the lower frequency band coils to be wound with number 18 wire, the medium frequency band coils to be wound with number 14 wire, and the higher frequency band coils to be made of number 12 wire. In each case good form factor demands that the coils be about twice as long as their diameter. These "air-wound" coils can then be supported within sealed insulating tubes having sufficiently high strength to withstand the rigorous treatment to which they will be subjected. They should not be sealed within metal housings nor should they be encapsulated within a solid dielectric material.

Sealed Coils

A newly developed series of coils of this type is sealed within chemically-welded acrylic housings from which the air has been removed by vacuum pump and then replaced with pure helium. This makes them impervious to moisture change, dirt, salt spray, and the like, and assures constantly high operating efficiency. Coils of this type have a measured Q of better than 400.

Optimum Dimensions

For those fortunate enough to have access to good test equipment, including a high quality Q-meter, the following tabulation of inductance and dimensions is sufficient to enable them to build their own coils for each band:

Band	Microhenries	Number Turns	Wire Size	Diameter
75	107	55	#18	2½"
40	32	30	#14	2½"
20	7.5	11	#12	2½"
15	1.85	4	#12	2½"

These coils should be of the air-wound type, rib supported, with the turns spaced about the diameter of the wire. In all cases they are based on using a 36" lower support rod and a 60" top whiprod. Some final adjustment will be required after installation due to differences in winding technique, distributed capacity, and other factors. When a mobile antenna is installed the coils should be left alone if they have been properly designed in the first place. It is never advisable to upset their form factor or in in any way chance destroying the Q of the coil. Adjustment of the antenna to frequency can be made quickly and easily by top rod adjustment. If coils are made in accordance with the charted data, very little frequency adjustment will be required.

Multi-band Operation

At this point it will be apparent to the reader that we have been discussing individual loading coils only. One for each band employed. This article is concerned only with designing the best possible mobile antenna from which the greatest possible radiation can be obtained. All multiband loading devices must sacrifice efficiency in favor of convenience. There has never been built a multiband loading device that ca begin to approach the efficiency of the antenn system herein described. The shorting of single turn in the loading coil can chop the Q i half. Anything inserted in, or near, the co field will put you right back where you starte or worse. Sliders, rods, switches, variable co densers, slugs, taps, clips, or even a piece o wire, if inserted within the field, will start th process of Q destruction, loss resistance in crease, and field strength reduction. By usin individual coils we are shooting at maximu possible efficiency. Convenience must therefo be sacrificed. Take your choice. You ca either have a very good "one coil per band antenna or a relatively poor "all band" model You cannot have both.

The *average* mobile installation is not of th calibre where quick band-change, including th antenna, can be accomplished while the vehicl is still in motion with any degree of safety o convenience anyway. This type of mobile op eration is coming, but it just is not here yet. Th *average* mobile installation is a single ban affair, or, at least, is primarily used as such. Fo the time being the only answer to antenna effi ciency lies in having a set of good loading coils one for each band employed, and, if you wa to live to a ripe old age, stop your car an change both at the same time, equipment an antenna coil, when shifting from band to ban

Preliminary adjustment of the antenna can b made with a grid dip meter. Final adjustm should never be attempted with this instrum If you have made your coils in accordance w the chart, you will probably find that using t grid dip meter at all is simply a waste of tim You will probably be able to insert them, on after the other, and discover that your antenn "loads" with all of them. We are, howeve shooting at considerably more than just "loa ing" which is not an expression of radiatio efficiency. It is, however, a step along the way What we want is a set of coils to cover a amateur bands when used with the same top ro length. The chart is designed to give you suc a set of coils. It is more difficult to secu resonance within the 75-meter band than i any other band. This is the place to start check ing.

75 Meters

The 75-meter coil shown on the chart i designed to center, with the rod lengths stated at 3900 kc when operating, and not by grid di measurement.

You should fire up your transmitter determine that it will center there. It will approximately 50 kilocycles either side o center with fair efficiency although it should b used on center for maximum efficiency. Thi may be all of the 75-meter band you will eve care to cover. If it is not, and you wish t cover the entire band, you must resort to c pacitive tuning.

It is not possible to design one coil, or one antenna, with sufficient bandwidth to provide anything resembling efficient operation over such a wide frequency range as the entire 75-meter band or even between 3800 kc and 4000 kc. You cannot tap the coil and move inductively. You cannot place a variable condenser in, or near, the coil field. You cannot place an adjustable slug within the coil. There is only one answer. The distributed capacity of the entire antenna system must be changed or the inductance must be changed. In either case, this means that the top tuning element, above the coil, must be modified. There is nothing you can do to the coil and there is nothing you can do below the coil that will not louse up the antenna efficiency. This includes inserting variable inductors, motor driven or otherwise, at the base of the antenna.

Top Loading

The addition of a very small capacitive device, "hat," strip of aluminum, wire, or rod firmly attached to the top whiprod is the only good method. When this is attached it then becomes necessary to adjust the top rod length in a manner so that with this device located some distance up the top rod, you can achieve resonance at the 4-megacycle end of the band. The device can then be moved down the top rod, closer to the coil, to predetermined locations, for satisfying resonance at lower frequencies in the band. This hat will cause some ng and sway and is to be recommended only for those who must cover the entire band quickly and are willing to sacrifice some efficiency to this end. A better method is to carry along more than one top rod and change to a different length if necessary. You will experience no difficulty at all in covering the other bands higher than 75 meters with but a single rod and without tuning devices. This complication is applicable only to the 75-meter band.

Top Rods

On the subject of top rods, here too the best compromise must be selected. The top rod is essentially a tuning element and not a radiating one. Most effective radiation takes place below the loading coil.

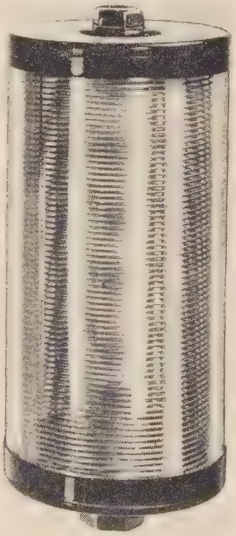
Whipping around of the top rod can cause more detuning, mismatch, changing plate loading, and SWR, than motion of any other antenna section. If the top rod "leans" this can ally be compensated for by equipment adjustment. If it wobbles all over the sky while re driving you are licked. A heavy metal rod is definitely not the answer. A slim, stiff, lightweight metal rod is better. The newer, very lightweight fiberglas top rods are better yet. Standard fiberglas rods of the proper length are now being made that will stand up practically straight at any car speed and will not flounder around when the brakes are applied. If you select one, make certain that it is equipped with a metal corona ball and not one of plastic. With a really high-Q coil at 4 megacycles you can actually burn the plastic ball right off the top of the rod.

Final Adjustment

Now for final frequency adjustment of the antenna. Again let us say that if your coils have been properly made in the first place, it is a serious mistake to prune them. Set up the antenna and fire up the transmitter. With antenna resonance somewhat on the low side, which is where it will be, you are ready to go. If you use a pi-net output circuit in your transmitter it is a relatively simple job at this stage to trim the antenna to exact frequency. With the antenna somewhat on the low frequency side it will exhibit inductive reactance and the transmitter will "load" only with a minimum of pi-net loading condenser. By trimming the top rod, fractions of an inch at a time, the pi-net loading condenser will start coming in and more capacity will be required each time the rod is trimmed. When you arrive at a point where from 300 μμfd to 500 μμfd is being used to properly load your final, you are there. Go no further, it is tuned.

If you have made your coils according to the chart, you can now shift from coil to coil and you will find that your antenna is properly adjusted for all bands. About the same amount of pi-net loading condenser will be used on each band. This is the time to begin finding out what you really have accomplished.

[*Continued on page 100*]



Hermetically-sealed Helium-filled case permits extremely high Q in this loading coil.

The I's Have it

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a comprehensive review of the evil I's

Much has been said in the pages of Ham and service magazines about our tiffs with the one-eyed monster, TVI. Quite a few hams even today spend a good part of the time, which they might otherwise profitably use operating, explaining to their neighbor why his bargain $79.95 "Super Jet Six Tuber" (bought for $4.98) is susceptible to BCI. The purpose of this blurb is to acquaint some of our more fortunate brethren with some of the lesser known but equally sinister "I"s, EOI, HFI, GDI, and MAI.

The first lesson for today is about EOI. It all started like this. About 9:00 a.m. on a beautiful Saturday morning, Barry Giesler, a deep dyed DXer, had just sunk into the beauty rest after a profitable all-night vigil on the Ham bands, when Mrs. Giesler shook him out of bed to tell him that the minister from the church down the street was calling on him. After a pleasant greeting, the cleric told Barry of an experience at the services on the previous Sunday morning. The topic that morning had been about how the Good Shepherd guides His sheep and leads them upon the path of righteousness. The sermon had the congregation on the edge of their seats and the preacher paused to lend emphasis to his words when suddenly a deep voice shook the rafters calling "CQDX." This caused general pandemonium to say the least, since several members of the congregation thought the voice had said "seek you the exit" and had knocked each other down in their haste to find it. The minister had managed after the service to hear Barry's call letters from the mysterious voice and through the aid of a brother (?) Ham in the congregation looked him up.

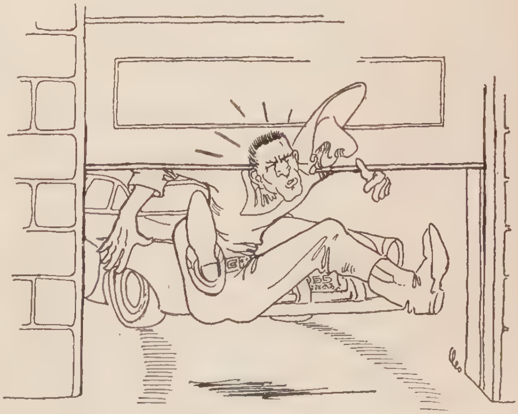
After a short check, Barry decided that the culprit was a newly installed electric organ. He called the manufacturer of the organ, who sent out a service man. Unfortunately, this service man had spent 48 of his 49 years on more conventional organs and about all he knew of the latest model was how to put the plug in the wall socket. After a number of tests, all unsuccessful, the organ service man was about to throw in the towel, when he enlisted Barry's aid. Our Ham hero, consequently, cured the erring organ in short order with a handful of judiciously applied by-pass condensers. The service man, in a fine display of the wisdom which comes with the passage of time, decided it was time for him to get out of the organ business when they started repairing them with little pieces of wire, wax paper and ceramic. He has now retired on a nice pension to raise chickens in New Jersey. Barry, as a result of the old fellow's recommendation based on the "miracle" he performed, has been hired as Service Manager of the organ company and is doing very well, thank you. Thus this case of EOI, Electric Organ Interference, ends on a happy note which is more than can be said for most cases of this kind.

Our second horrible example deals with old Hubert E. Lindenhiemer, member of the Old Timers' Club, traffic handler from way back, who is affectionately known as Lindy by brother amateurs the world over. It is a well known fact that his stone cold kilowatt grinds out more messages than the local Western Union office. After his day's work as the local dog catcher, nothing is more relaxing to Lindy than to push traffic through the various nets to which he reports. While all was serene in the Lindenhiemer household the evening this episode took place, the very opposite was true at the home of his neighbor, Mr. Van Ritzbitz. Mrs. Van Ritzbitz, a woman with social ambitions, much to her husband's disgust, had purchased an expensive high fidelity outfit and an extensive collection of classical recordings. To Mr. Van Ritzbitz' way of thinking this was pure nonsense as not a single piece of this music could be whistled or was suitable for rendition by a barber shop quartet. The situation had grown particularly tense on this Wednesday night because Mrs. Van Ritzbitz had invited the local Literary Guild to hear a rendition of the "Gypsy Trumpeter" at the same time her husband Herbert had planned to view a championship fight on TV. Retreating from the arena Van Ritzbitz poured out his troubles to his old friend Lindy over some cold, refreshing beverages in Lindy's basement shack. Soon the smooth notes of the "Gypsy Trumpeter" came wafting through the basement window. Coincidentally, this was the time Lindy started relaying a stack of messages picked up on an earlier traffic net. It is impossible for mere words to describe the sounds that rent the intellectual aura when hot fist Lindy's 40-words-per heterodyned the hot licks of the "Gypsy Trumpeter." Every dog Lindy had caught for weeks began to wail. A nearby CD official thought the air raid siren had sounded and took to his beat with helmet, shovel, stirrup pump and a bucket of sand, while the cars of Literary Guild members leaving the Van Ritzbitz home gave the appearance of the area being evacuated. The next day the hurt feelings and tears of Mrs. Van Ritzbitz were forgotten, however, when her hubby presented her with a new 27 inch TV (upon which he views the fights undisturbed while the Literary Guild meets at the town hall). So, brother, let this be a warning of the evils of HFI (Hi Fi Interference): It can lead to all kinds of difficulties, or advantages. Who knows which way the ball will bounce?

Our next episode has to do with the experience of once cheery and carefree Dan McGlinn, W5EEE, whose special interest was working DX on 160 meters. To this end he had erected a full wave vertical for the band, which was as visible across the plains of his native state as Mount Everest would be in the Mojave Desert. Of course the advertising value of this was great, and as a result he had received numerous complaints from his neighbors, as well as an order from the CAA to put red warning lights on the monster. Just about every unexplained phenomenon in town was blamed on him, but actually the only legitimate claims were one of faint TVI and another when a cat lost its fur because it was chased up Dan's tower by his dog "Radioactive Rex." Dan, in his own good natured manner, had been able to shrug these incidents off with a smile until the day the big blow fell. This was the first day of the 160 meter DX tests.

About a month previous to the fateful day, an energetic salesman had cleaned up selling electronic garage door openers in the neighborhood. These were sold at a bargain price because the manufacturer had found that their use in connection with metal doors had altered tuned circuits so they were sensitive to Loran interference. Wishing to unload them at a price where he could get his money out of the deal he had carefully selected an area free of Loran signals. Unfortunately, he hadn't heard about Dan's operations. All the door openers had long been installed by the night when Dan sat down to listen for the first five minutes of the DX test. Hearing a good one, Dan replied, "HZ1ZZ de W5EEE" and as he carefully tapped out this message 93 garage doors rose and fell in unison. The only fortunate thing about this was that his call was not W0OOO, because the result was catastrophic. One lanky Texan, who happened to be walking through his door at the moment, is now several inches shorter overall in spite of the fact that

[*Continued on page 103*]



GDI

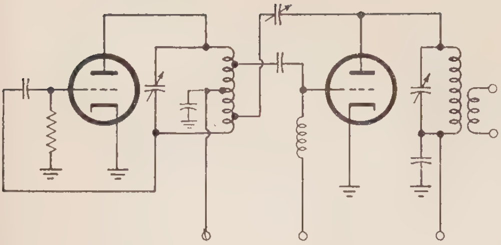


Fig. 1.

Conclusive data favoring
parallel-tuned oscillators

New Data on VFO Stability

Cdr. William B. Bernard
Navy Electronics Laboratory, San Diego 52, Calif.

As one looks through publications devoted to matters of interest to radio amateurs one sees that almost all the VFO's described are ECO's (electron coupled oscillators) and that almost without exception these ECO's use the Clapp series tuned circuit. From this evidence one might draw the conclusion that such circuits represent the best engineering available today. Such a conclusion is quite incorrect and it seems that the real explanation is that we use the ECO out of habit and that we use the series tuned circuit because it has incorrectly been publicized as being inherently more stable than other forms of oscillator circuits.

In the early days of radio spark transmitters were most popular. The signal emitted from the spark transmitter was broad, the receivers were broad and frequency stability was not a matter of too great importance. The first electron tube transmitters consisted of an oscillator directly coupled to an antenna. A great many of these were operated with A2 emission and again frequency stability was not a highly sought after commodity.

Stability Becomes Important

As the advantages of A1 or CW emission were realized and as more and more transmitters came on the air frequency stability became a matter of more interest. In general most transmitters were still oscillators coupled to the antenna. Constructors were urged to make their tank circuits mechanically rugged and to use high C in the tank. They were also advised to make the antenna system mechanically and electrically stable since a change in the antenna constants would be reflected back to the transmitter and cause a change in frequency.

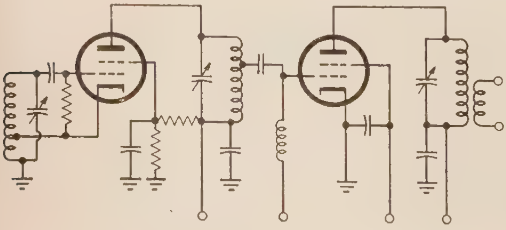


Fig. 2.

M. O. P. A.

The master oscillator-power amplifier transmitter was the next step in the path of progress. A typical MOPA circuit is shown in *Figure 1.* Both the MO and the PA were triodes and the PA required quite a bit of driving power so that it had to be closely coupled into the oscillator tank. It was, of course, quite an improvement compared to connecting the oscillator directly to the antenna, however, it still left a good bit to be desired. As the loading on the plate of the PA was changed the input impedance of the PA grid would change, also faulty neutralization of the PA would allow changing conditions in the PA plate circuit to influence the frequency of the oscillator.

Screen Grid

The introduction of screen-grid amplifier tubes improved the situation by further isolating the PA output circuit from the oscillator tank thus reducing the effect of PA tuning and loading upon the oscillator frequency. The early screen-grid amplifiers required a fairly high driving power so that the oscillator still had to be designed primarily as a power oscillator.

Crystal vs. VFO

Along about this period crystal control of oscillator frequency became widely used in many radio services but others, especially amateur and the armed forces, needed flexibility of output frequency so that some type of LC controlled oscillator was very desirable. J. B. Dow developed the ECO to fill this need. *Figure 2* shows a typical ECO-PA type transmitter.

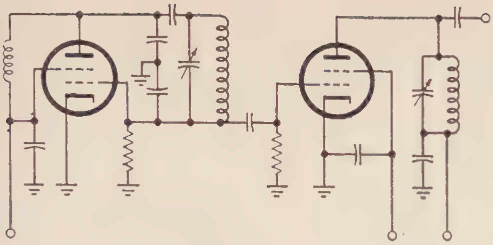


Fig. 3.

In this system the output of the PA was further isolated from the frequency-determining circuit and as an additional advantage the output frequency could be made relatively independent of the ECO plate supply voltage if the tap of the oscillator cathode upon the oscillator tank and the proportioning of the screen and plate voltages were carefully adjusted. It should be noted that the output current of the ECO flows through a portion of the frequency-determining tank and therefore changes of loading on the plate of the ECO will have some effect upon the frequency of the ECO.

Over the many years that have elapsed since the ECO was developed, new tubes of great power sensitivity with effective screening between plate and control grid have become available. It is now possible to drive a 1 KW PA with one or two receiving type tubes. These small tubes are also well screened so that the output of an oscillator buffer system such as is shown in *Figure 3* may be as well or better isolated from the frequency-determining tank than is the case with an ECO having a tuned output as shown in *Figure 4.*

Since we may now use small tubes as oscillators and buffers we may easily regulate the plate voltage of these tubes with VR tubes so that the variation of frequency of a conventional oscillator caused by a variation of plate supply voltage can be considered as a secondary matter. It should be noted here that probably very few ECO's in use in amateur stations have been adjusted to realize the potential independence of frequency and plate supply voltage.

ECO—Pros & Cons

We can now consider the advantages and disadvantages of the use of ECO's in amateur equipment. If the ECO is used one tube may serve as an oscillator and amplifier or oscillator and frequency multiplier. This can be considered an advantage only in equipment where space is at a very great premium since one miniature tube and socket will take up only about two cubic inches of space. As mentioned in the preceding paragraph the frequency of an ECO can be made fairly independent of the plate supply voltage if it is properly adjusted so a voltage regulator tube may not be as essential as in the case of other types of oscillators. The elimination of the need for a VR tube is also of most importance in a transmitter where space is the controlling factor. Unless a special tube type is used an ECO must have the cathode tapped above ground so that the screen grid may be operated at r-f ground potential otherwise there will be insufficient screening between the grid and plate circuits. If the cathode is operated above ground there is a good chance that leakage in the heater cathode insulation may cause a-c modulation of the oscillator output. Also if the cathode is tapped up on the frequency-determining tank the plate current of the tube, which will be influenced by the load upon the tube, will flow in the tank and thereby be able to influence the frequency of the oscillator.

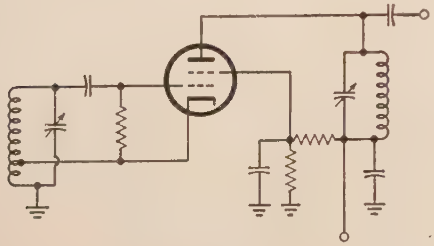


Fig. 4.

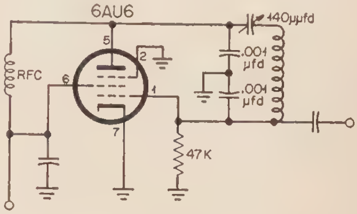


Fig. 5.

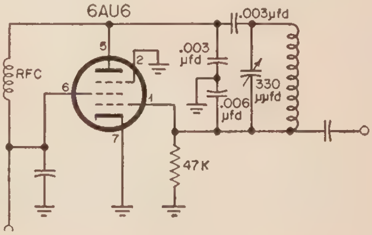


Fig. 6.

To state the matter positively it may be said that at the present time it is possible to build an oscillator-amplifier or oscillator-multiplier combination which will give isolation between the frequency-determining circuit and the output circuit which is better than that offered by the ECO. With the separate oscillator tube the oscillator cathode may be grounded thus eliminating hum modulation problems, and

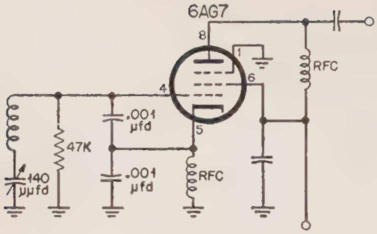


Fig. 7.

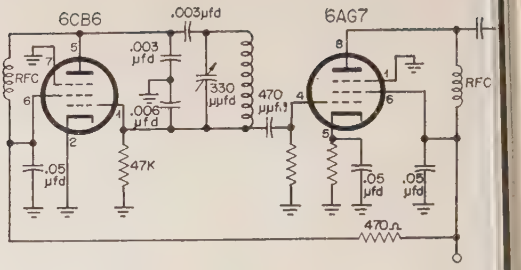


Fig. 8.

with the separate oscillator tube the amount of the frequency-determining tank which is connected in the oscillator grid circuit and the amount connected in the oscillator plate circuit may be adjusted to give the highest stability without reference to other considerations.

Series-tuned Oscillators

Next we may consider the advantages and disadvantages of the series tuned oscillator. In 1948 Clapp[1] published the first paper which purported to prove that the series-tuned oscillator circuit was inherently more stable than other types. This circuit was enthusiastically adopted by the amateur fraternity although in actuality the circuit is not capable of any greater frequency stability than many other circuits. Edson[2] later showed that the frequency stability of an oscillator is dependent only upon the Q of the circuit and the impedances offered to the tube electrodes. In 1954 Clapp[3] published a paper in which he again attempted to show that the series-tuned circuit had a superior frequency stability. The error in this paper has been admitted[4] so Edson's analysis of oscillator stability may be accepted without reservation and the various oscillator circuits may be compared upon their practical merits.

Impedance vs. Stability

In order for changes in the oscillator tube characteristics to have the least effect upon the frequency of the oscillator the tube should be connected across the lowest circuit impedances that will maintain oscillation. These impedances are given by the equation

$$\frac{1}{G_m} = \sqrt{Z_g Z_p}$$

where Z_g is the circuit impedance between the grid and cathode, Z_p is the circuit impedance between the plate and cathode, and G_m is the transconductance of the oscillator tube. The desired impedances may be obtained either by increasing the total circuit capacity or by tapping the oscillator tube across a portion of the tuned circuit. If we are to vary the oscillator frequency by the use of a variable capacitor we are limited in the amount of total capacity which we can place across the entire circui in order that a variable capacitor of a practica size will have sufficient Δ C to tune over the desired frequency band. In order to attai sufficiently low circuit impedances at mediu frequencies it may be necessary to tap the oscillator tube down on the oscillator tank.

Tapping Down on the Oscillator Tank

Once it has been decided to tap the tube down on the oscillator tank we have the choice of tapping either the inductive or the capacitive branch of the tank. Lampkin[5] attained high stability by tapping the inductive branch. If the inductive branch of the circuit is tapped it is recommended that the tube be connected to the tank through isolating resistors to suppress any tendency for the tube to oscillate at a frequency determined by the tube capacities and the portion of the inductance included between the taps. Such high frequency parasitics do not occur if the capacitive branch of the circuit is tapped. In tapping the capacitive branch of the circuit we have the choice of series or parallel tuning. Since the impedances offered to the tube vary more rapidly in the series tuned circuit than in the parallel tuned circuit it can be seen that over any appreciable frequency band higher theoretical stability may be attained by the parallel tuned circuit.

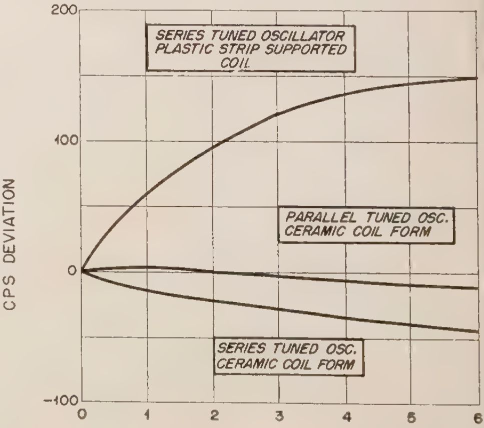


Fig. 10.

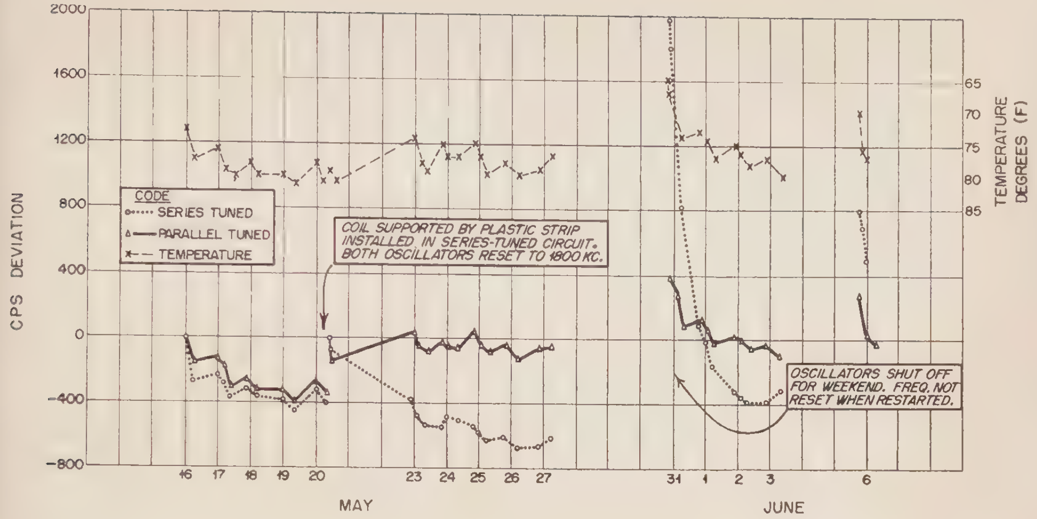


Fig. 9.

Results of Tests

In order to check the theoretical considerations of the case two test oscillators were constructed. These oscillators were ruggedly constructed and the coils were wound on ceramic forms 1¼″ O.D. with 1½″ of winding space. The coil for the series tuned oscillator required 66T while the coil for the parallel tuned oscillator required only 17T. The circuits of these oscillators are shown in *Figures 5* and *6*. These oscillators were checked for frequency deviation vs. plate supply voltage, vs. heater supply voltage, and vs. time. There was no significant difference between the performance of the two oscillators. A study of the variation of frequency with time indicated that the theoretical considerations of stability were considerably overshadowed by the temperature coefficients of the elements of the tuned circuit. Another run of frequency vs. time was made and the temperature inside the oscillator chassis was recorded. This run confirmed the supposition that the primary cause of frequency variation was the effect of temperature upon the tuned circuit.

Temperature vs. Frequency

The oscillator of *Figure 5* was converted to the circuit of *Figure 7* which is typical of those described in amateur publications and an amplifier was added to the circuit of *Figure 6* producing the oscillator-amplifier of *Figure 8*. Again the runs showed little difference between the long-term stability of the two circuits and again the frequency variations had a temperature dependence. The first section of *Figure 9* for the period May 16-20 shows the deviation of the two oscillators from the test frequency of 1800 kcs and the variation of temperature of the oscillator chassis. The temperature readings are plotted with the scale inverted to show the correspondence between temperature changes and frequency variations. This correspondence is good enough that temperature compensation of the circuit should not be very difficult to accomplish.

Plastic-Strip Coils

In order for a series tuned oscillator to operate with a very small tuning capacity it is necessary to use a coil of reasonably high Q.

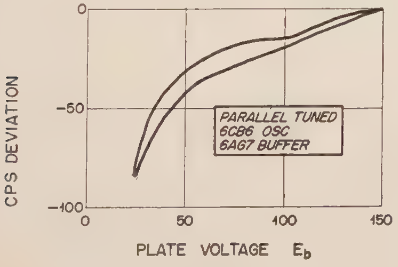


Fig. 11a.

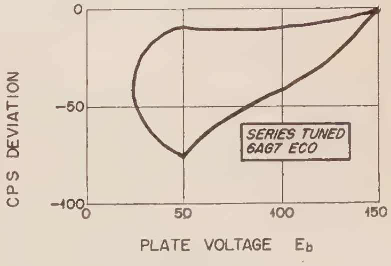


Fig. 11b.

Many constructional articles recommend the use of plastic strip supported coils. One of these coils was substituted for the original series tuned oscillator coil which was wound on a ceramic form and the data plotted in *Figure 9* from May 20 to June 6 shows the comparison of this oscillator with the one shown in *Figure 8*. It can be seen from this plot that the frequency of the oscillator using the plastic strip supported coil does not vary directly with temperature and thus could not easily be compensated by the use of negative temperature coefficient capacitors. In addition to this disadvantage, the plastic strip supported coil is not nearly so rugged as the coil wound on the ceramic form and since the Q is only slightly higher than the Q which can be attained using a ceramic form and spaced turns (165 compared with 155) it is highly recommended that such plastic strip supported coils not be used where high oscillator stability is desired.

Ceramic Coil Forms

Although the long-term frequency stability of the two oscillators using the ceramic coil forms is essentially the same there are some short-term effects which should be of considerable interest to the amateur. The oscillators were allowed to stand by for a period of five minutes with heater voltage applied but with the plate voltage off. Then the plate voltage was applied and the frequency drift for the next few minutes was recorded. These data are plotted in *Figure 10*. It can be seen that the frequency drift of the series tuned oscillator is approximately six times the drift of the parallel tuned oscillator. This higher drift is probably due to the lower thermal capacity of the small wire which had to be used for the series tuned coil. When the strip-supported coil was substituted for the ceramic supported coil in the series tuned oscillator the frequency drift increased to about twenty times that experienced with the parallel tuned circuit. Strangely enough this drift is to a higher frequency. The only plausible explanation seems to be that the plastic strips are heated by r-f losses and expand the coil lengthwise faster than the losses in the wire expand it diametrically. Since the only change between the series tuned oscillator between the two runs was in the coil the difference in the drift must be considered to be due to the coil.

Frequency vs. Plate Voltage

Runs of frequency deviation vs. plate supply voltage were made for the oscillators of *Figures 7* and *8*. The results of these runs are shown in *Figure 11*. These show that a 6CB6 tube in the parallel tuned oscillator has a somewhat better characteristic than the 6AG7 series tuned oscillator. Not only is the greatest frequency deviation of the parallel tuned oscill tor less over most of the useful range but th frequency for a given voltage is nearly the sam whether the oscillator previously has been ru ning at either a higher or lower voltage whic is not the case with the series tuned circui Another advantage of the parallel tuned circu is that the "hot" end of the coil has 1000 $\mu\mu$f of capacity to ground therefore it is only 1/1 as sensitive to changes of capacity to groun of this end of the coil and its associated wirin as is the case with the series tuned circu where the capacity of the "hot" end of the co to ground is in the order of 100 $\mu\mu$fd.

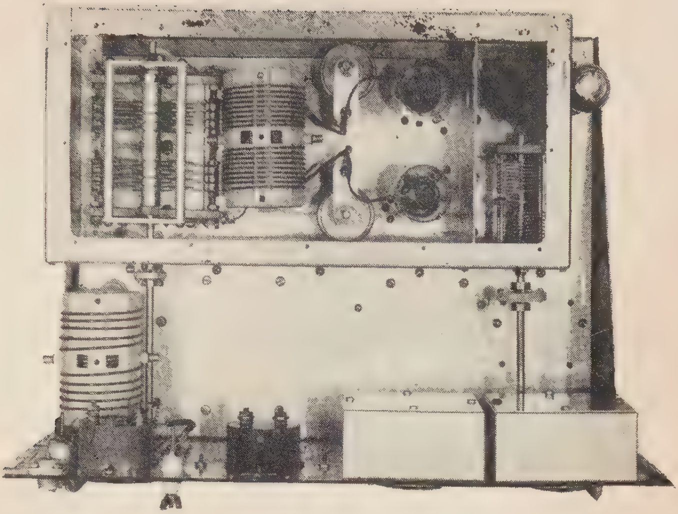
Recommendations

As a result of the investigations certain rec ommendations may be made. Some of thes were first made years ago but we seem to hav ignored them so they will be reiterated. Th mechanical construction of the oscillator circui should be rugged. All insulation should b ceramic where possible. Although the Q of th oscillator coil should be high, mechanical sta bility of the coil should not be sacrificed t increase Q since the studies reported here indi cate that changes of tuned circuit constants du to temperature variation overshadow othe sources of frequency deviation. For the fore going reason it is most desirable to locate th frequency determining circuit of the VF where it will not be subjected to large changes in temperature. The total circuit capacitie should be made as large as practical since this makes the frequency less susceptible to variation resulting from mechanical movement o the coil and associated wiring and the coil ca be of smaller inductance therefore it can be wound of heavier wire which will have greate thermal capacity resulting in smaller short-time frequency changes. If the space is available it is most desirable to use separate tubes for the oscillator and buffer functions and to regulate the plate supply to the oscillator tube.

The investigations which led to this article have only scratched the surface of the improvement which may be made in the usual amateur VFO. It is hoped that the article will stimulate further research to lead to improvement of VFO's. It will not be too difficult to improve on many of those now in use, so let's look at our oscillators and improve them.

1. Clapp, J. K. "An Inductance Capacitance Oscillator of Unusual Stability," *Proceedings IRE*, March 1948.
2. Edson, W. A. "*Vacuum Tube Oscillators*," John Wiley and Sons.
3. Clapp, J. K. "Frequency Stable LC Oscillators," *Proceedings IRE*, August 1954.
4. Bernard, W. B.,
   Clapp, J. K., Correspondence Section, *Proceedings IRE*, July 1955.
5. Lampkin, G. F. "An Improvement in Constant Frequency Oscillators," *Proceedings IRE*, March 1939.

Front view. The antenna coaxial connector parallels the antenna terminal underneath it. The second meter from the left is unused at present.



the O-T* Transmitter

Capt. G. L. Countryman, W3HH
Bureau of Ships, Navy Dept.,
Washington 25, D. C.

Behold! The forces of reaction are setting in! W3HH brings out a few of the points in favor of good old-fashioned triodes, and presents a Rock-of-Gibraltar type reliable rig which many a harassed parasitic-chaser and tube-replacer may want to build. TVI-proof . . . Rugged . . . Inexpensive, too . . .

Most of the transmitters described today contain, on one chassis, a bandswitching screen grid amplifier with pi-network output, and nothing else. This means that normally there must be added on additional chassis and panels, a grid bias supply, low pass filter, antenna coupler, antenna relay and perhaps the filament transformer.

There are many of us who are not too much interested in rapid bandswitching and would prefer to forego that feature in the interests of having one compact rig, complete in itself. As the average ham grows older, he has increasing family and job responsibilities and less time to devote to his hobby. As a result, he usually settles on one band with which he is familiar and where his old-timer friends can usually be found. Generally the band hoppers are the contest winners and the younger group who have been active on the air for only a relatively few years.

Let's discuss for a minute some of the reasons why a single screen grid tube has replaced the once standard pair of triodes.

(a) One tube will do the work of two.
Possibly true, but at no saving of dollars and cents. Forgetting about war-weary surplus, an 813 currently sells for $18.00. A pair of 812A's cost $10.00. If you want to keep a spare on hand (and who doesn't), two 813's come to $36.000 and three 812A's are only $15.00. Furthermore, an 813 requires 2250 volts on the plate and 400 volts on the screen for 375 watts output on CW. A pair of 812A's give you 380 watts output with one 1500 volt supply.

(b) No neutralizing is necessary.
Rarely true. The author would much rather spend 5 minutes adjusting standard neutralizing condensers until the grid current doesn't vary as the plate condenser is swung through resonance with plate power off, than to fool around for hours trying to neutralize or "de-

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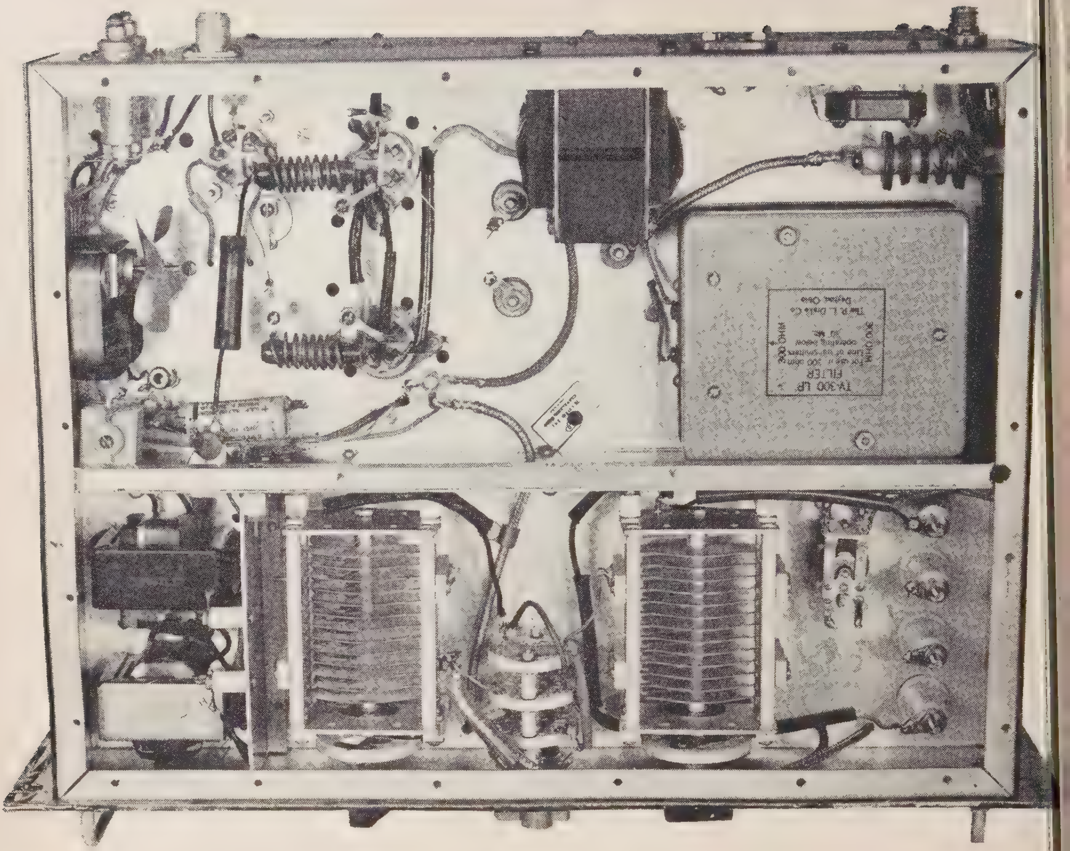
*Old-Timer



Under chassis view of O.T. transmitter with perforated shield plate removed.

neutralize" an 813 or a 6L6 or a 4-250A.

(c) Very low r-f drive is required for a SG final, eliminating the necessity for buffer-amplifier stages. True, however, a pair of V-70-D's require only 7.8 watts of drive for a full 450 watts output. The author's pair of 35T's run at 500 watts input (2000 volts at 250 mils) with a driver consisting of an 807 coasting along at 400 volts and 60 mils.

No one will deny that a triode requires a simple power supply, since no screen-grid voltage is required, nor can it be denied that triodes are generally more stable than the sensitive screen grid tubes. Anti-TVI measures can be relatively simple with triodes and a push-pull circuit tends to cancel out even harmonics.

It is simple to design and construct a stable foolproof rig with all necessary controls and auxiliary equipment built in, if operation on one band is all that is normally required.

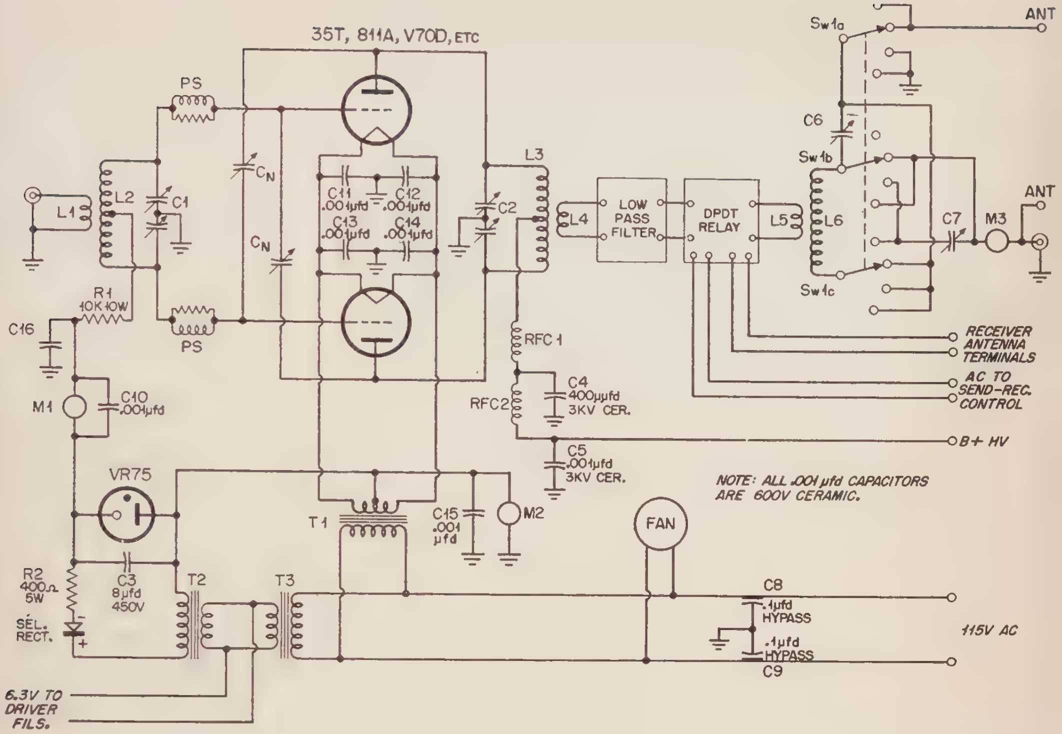
In the author's copy, plug in plate and grid coils are used so that band changing is possible. If frequent band-changes were desired a hinged-shield top could readily be devised.

The transmitter illustrated in the photographs has proved to be reliable in every r spect. It will loaf along at 400 to 500 watts i put day after day. It contains every desirab feature but no frills, and all components have high safety factor so that the rig can be put o the air and forgotten for the next few year

The chassis is 17″ x 13″ x 3″ and the rac panel is only 10½″ high, yet included are th final amplifier, filament transformer, bias su ply, low pass filter, cooling fan, antenna rela and a unique universal antenna coupler. A TVI measures are used, including bypassin filtering and extremely effective shieldin There is no TVI on any channel.

Construction

If you duplicate this transmitter, start ou by going down in the basement and digging ou either two BC375E tuning units or one un and the large variable condenser from anothe These tuning units are advertised in most magazines and are inexpensive. Two of the 27-plat condensers on the right hand side of these tu ing units (the ones attached to the velv vernier dial) are used in the antenna couple as they fit nicely under the 3″ chassis and hav adequate plate spacing. The shield enclosur and panel handles are also from the same read



Complete schematic for the O-T Final

ily available surplus tuning unit.

Then, unless you want to make your own plate and antenna inductances or buy commercial types, visit your local bargain counter, where, if you are lucky, you can pick up a couple of obsolete Johnson 660 series transmitting coils wound on 2½″ ceramic forms with a rotatable link inside. These should cost about a buck apiece. (No, Johnson has no more in stock.)

In the wiring diagram, the specifications are those for the Johnson 660 series 40 and 20 meter coils, the latter being used in the antenna coupler. The plugs were removed and regular banana plugs substituted in the antenna coil so it could be mounted on standard feed-thru insulators with jacks on top.

For operation on bands other than 40, different values will of course be necessary. If currently available manufactured coils are used, it is usually satisfactory to use a coil in the antenna circuit for the next higher frequency amateur band than the plate coil.

If the same layout is used, manufactured coils must be used that are short enough along the coil axis to fit in the limited space available, with a link assembly that does not take up too much room.

The photographs give a good idea of the layout. The amplifier shield box with the partition isolating the grid section is from the BC375E tuning unit, with the partition relocated as shown. The handles on front of the panel are from the same unit and make for ease in handling. If no tuning unit is available, the shielding is easy to construct with perforated aluminum sheet and angles or rod. The chassis meter shields and brackets are standard stock, and the latter are cut down as necessary with a hacksaw so as not to interfere with the final plate milliameter shield on the right, nor the antenna coil on the left. There was no advantage to be gained in moving the an-

Parts List

C1 — 100 µµf. per sec. variable (**Bud** CE2035)
C2 — 100 µµf. per sec. variable (**Johnson** 100-DD35)
C3 — 8 µfd. electrolytic 450 v.d.c.
C4 — .0004 µfd. mica 2500v.
C5 — .001 µfd. ceramic 3000v.
C6, C7—27 plate tuning condenser removed from BC375-E tuning unit. Approximately 200 µµf. 2500v.
C8, C9—.1 µfd. "Hypass" **Sprague** 80P3)
Cn — Neutralizing condenser (**Bud** NC853)
Fan — **WRL** 50A092, 50A093
Low Pass Filter—(**Drake** TV300LP)
L1, L2—**Barker & Williamson** MCL series
L3, L4, L5, L6—**Johnson** 660 series.[1]

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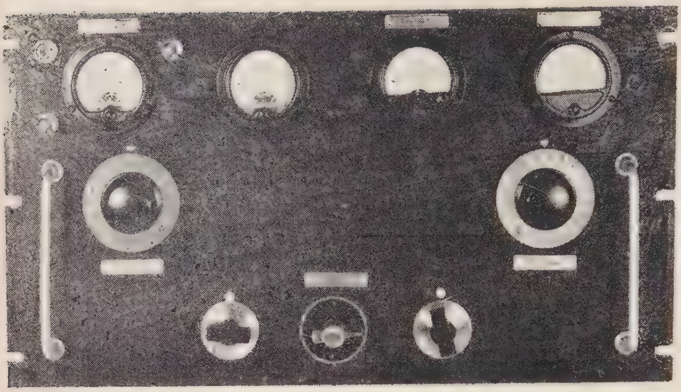
[1] These coils are no longer made by the **Johnson Co.** Many are still available however, at low cost, from leading radio houses. If they are not available, any coil capable of handling 500 watts could be substituted. Provided of course, they will fit into the shield. Still another alternative is to design the shield to fit the coils at hand.



Top view with the cover plate removed from the shielded enclosure. Heavy shield braid is used for tube plate connections to cut down the inductance. Second meter from the left is not used yet.

tenna coil to the center of the chassis, away from the steel chassis support bracket. The arrangement used leaves space available for a VFO-driver which will be added later.

The front panel is .125 3SH14 plain aluminum sheet; the perforated bottom cover is .032 3SH14 aluminum with ⅛″ holes on ⅜″ centers, and shields underneath the chassis are .032 plain sheet, all obtainable cut to size from Willard Radcliff, 1720 N. Countyline Street, Fostoria, Ohio, at reasonable rates. The piece of ¾″ aluminum angle needed to complete the BC375 shielded enclosure and ¼″ square rod are obtainable from the same source. The author has found that drilled and threaded square aluminum rod is easier to use and just as effective as the ½″ angle frequently specified for shielding support.

The two transformers used in the bias supply are in a completely shielded compartment, with six 3/16″ holes drilled in the chassis for ventilation. Four ¼″ holes around each tube base, together with the fan under the chassis, allow adequate tube ventilation.

Necessary shielding is clearly shown in the photographs and has been omitted from the wiring diagram in the interests of clarity.

Be sure to use unfinished aluminum front panel, chassis, and 4 x 4 x 2 meter boxes for proper TVI shielding. The front of the panel only should be crackle-finished after all holes are cut. The XYL will prefer you use an electric heater to bake the finish instead of her oven, unless you prefer lacquer-flavored pies and cakes for the next few months.

Circuitry

It will be noted that a grounded-rotor grid and plate condenser circuit is used. The condenser plate spacing does not become a problem unless modulation is used with high plate voltage. The condenser shown will handle modulation peaks at a plate voltage of 1500 volts. One advantage of the circuit used is that harmonics of the fundamental frequency coming from the tubes are grounded through the split-stator plate condenser and are not passed on through the link. A simpler low pass filter is thus possible.

It is essential that no plate by-pass condenser be tied to the plate tank center tap, and that the RF choke be used where shown, otherwise it is impossible to tune the plate circuit properly since the proper circuit impedance and resonance will not occur at the same condenser setting.

A novel, though not new metering system is used. From a personal safety as well as from an insulation viewpoint, it is wise to insert the plate milliammeter in the ground return from the filament transformer center tap. The objection to this system is that the plate milliammeter then reads the combined plate and grid currents with the usual circuit in which the positive grid bias supply is grounded. With the circuit shown, positive bias is returned to the filament transformer center tap rather than to ground, thus making the grid and plate meters read grid and plate current independently.

The neutralizing condensers shown are suitable for low grid-plate capacity tubes such as

Rear view. Tube at left is the VR75 used in the grid bias supply. Terminals, left to right, 115 vac input through Hypass condensers, RF input, connector to antenna terminals on receiver and terminals for relay control, and high voltage input terminal.

the 35T, and can also be used with 812A's or similar tubes. The larger size disc condensers usually specified for the 812 type tubes do not lend themselves too well to a compact layout.

The antenna coupler is as nearly a "universal" circuit as could be devised. With the switch in the upper (or #1) position, the antenna condensers are in series with the coil, for Zepps or other antenna systems requiring series capacity. In the #2 position, parallel tuning is available for Zepps, or by using only one terminal, for a direct connection to a half-wave radiator. With the switch in the #3 position, a Marconi feed is available and it is also easy to match a 50 or 75 ohm coaxial or twin-lead line. With the switch in this position, the lead from the antenna or feeder is in series with one of the variable condensers. In the #4 position, this condenser is shorted out, giving essentially parallel tuning with one side of the antenna tank coil grounded, the same as in position #2, with the antenna coil grounded. When using the two latter switch positions, it is sometimes desirable to connect the transmitter chassis to a water pipe or other good physical ground.

Taps on the antenna coil are unnecessary provided a little care is used in designing a tuned feeder antenna so that the feeders are approximately the correct length as shown in the *Amateur's Handbook*.

The author presently center feeds a half wave dipole with RG59U cable using the switch in the #3 position. The standing wave ratio is extremely low. The RG59U cable is cheaper and much easier to handle than the heavier stuff, and is ideal for outputs of around 500 watts if a simple center-fed "one band" antenna is used.

Components

Small parts were carefully selected for this compact rig, and those with greater than normal safety factor were chosen in the interest of reliability.

The first 6.3 volt bias supply transformer will permit two amps or so to be used for a driver if one is to be added later. If additional 6.3 volt current is required, space is available to accommodate a 6.3 volt 6 amp transformer on the shield partition directly across from the 5 volt transformer beneath the chassis.

The Johnson split-stator plate condenser is very husky, yet fits nicely in the available space.

The MG2C115VA Advance relay (former stock number K1504 115VAC) is compact and the contacts look small. Don't worry, it will handle 500 watts of RF nicely. When installing this relay, remember that the lead from the link in the antenna coil connects directly to the movable relay arm. It is wise to make a 1 or 2 turn loop in each flexible connecting wire to insure that the relay arm will operate freely.

The Drake TV-300-LP 2 section m-derived low pass filter fits nicely under the chassis, and with the amplifier circuit used, it is all that is necessary to insure harmonic suppression. Shielding of the antenna coil and r-f meter is unnecessary.

All power wiring is shielded, and heavy duty shielded wire is used for high voltage leads and for the r-f leads that go through the chassis. In all cases, wire shielding is securely bonded to the chassis.

Ohmite P-300 parasitic suppressors in the grid leads may or may not be necessary, but are included to insure stable operation. Plate leads and grid leads are matched so that they are exactly the same length for each tube to insure proper balance.

Ceramicon filament bypass condensers are connected at each of the four socket terminals. The low voltage leads from the filament transformer are exactly the same length, one connected to one tube and one to the other, to maintain perfect balance.

The high voltage v-h-f filter components have essentially no leads at all as installed.

The socket for the receiver antenna connection on the rear chassis apron is a Millen crystal socket. A National FWJ socket handles the relay circuit and a Millen high voltage feed-thru is used for the B+ input. A-c input is via two Sprague 80P3 Hypass capacitors. No r-f chokes were necessary in this a-c input circuit.

The transmitter filament transformers, bias supply, fan and all a-c voltages to the VFO and driver are turned on by an external a-c switch. A send-receive switch on the operating table silences the receiver, actuates the antenna relay, turns on the high voltage in the power supply and actuates the VFO circuit.

The unused meter on the front panel (second from left) and the unused space in the front center of the chassis will be utilized in a new driver now under construction. By careful planning, this driver on a sub-chassis can be fitted into the space available and will be completely shielded. The VFO tuning dial will be in the center of the front panel.

When the driver is added, an extremely compact transmitter will result. The 2000 volt and 500 volt power supplies are combined in a separate unit, slightly smaller than the transmitter, so that both units can be installed in a cabinet rack, or the power supply can be located separately under the operating desk, leaving a complete 500-watt transmitter no larger than the communication receiver on the operating table.

Tubes

A wide variety of triodes are available. The Eimac 35T's are small enough to fit nicely within the BC375E shielding enclosure. Taller

[*Continued on page 53*]

Coupling the Pi-

to a

Simple calculations for

Ed Marriner, W6BLZ

A single-ended pi-network final amplifier *can* be coupled to a balanced antenna, such as a center-fed dipole or a folded dipole, without using a balun coil. It *can* be done with little effort and small expense by resorting to the junk box.

For those of us who shy away from the calculations and mathematics ordinarily required, and it may well be that most of us come under this classification, there is an easier way out. John L. Reinartz, K6BJ, has prepared a simple set of curves, calculated to enable us to find the values needed for a pi-network output without overtaxing the think-box. The chart in *Fig 1* assumes a *Q* of 12 for an average reactance of 300 ohms. This chart and a straightedge are all the tools required to intelligently design our output circuit.

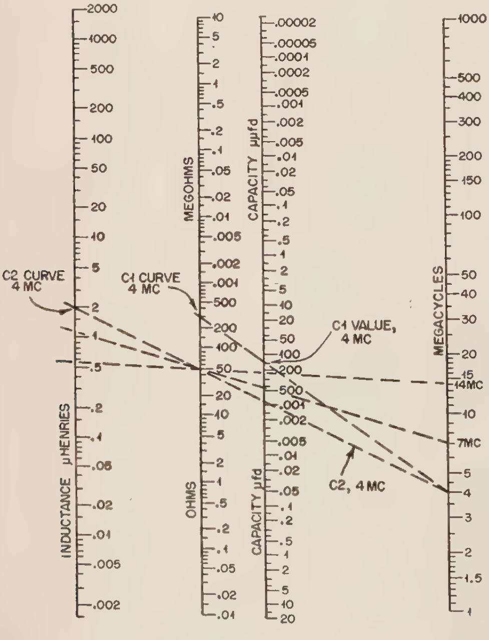


Fig. 1. Chart showing correct values of *C* and *L* for perfect impedance-matching of the Pi-Network output circuit.

Let us suppose that we wish to operate at 4 Mc and plan on running the output into a 50-ohm coaxial line. The chart will give us the value of the output capacitor (*C2* in *Fig 3*) by merely connecting the 4-Mc point on the right hand column of *Fig 1* with the 50-ohm point in the second column by means of the straightedge. The value of *C2* is given in the third column where the ruler crosses, at about 800 uufds.

For a *Q* of 12 the inductive reactance of *L1* will be 300 ohms for any frequency at resonance, therefore, by providing the correct values for *C1* and *C2*, a roller-type variable coil can be used, which can be cranked to resonance with the known values of the input and output capacitors. A roller-type coil of 15 microhenries inductance, such as the Barker and Williamson #3852, will be just fine.

Now a pi-network can be regarded as a parallel-resonant circuit in which the coil is shunted by the two capacitors connected in series. Since at resonance the capacitive reactance must equal the 300 ohms reactance of the coil, and since *C2*, in the 50-ohm output circuit represents 50 ohms of the total, it is obvious that the input capacitor *C1* must have the remaining 250 ohms. Going back to *Fig 1* we again set the ruler on 4 Mc and this time we connect it to the 250-ohm point on the load resistance scale. In the capacity column we see that we need about 140 uufds for *C1*. That's all there is to it! Just set the condensers

Network Balanced Antenna

perfect impedance-matching

528 Colima, La Jolla, Calif.

to the values obtained in this simple manner and vary the inductance for resonance.

The next step is the determination of the values of the components of the antenna matching circuit, which has been previously described. This is an antenna tuner which we can put directly across the feed line, without having to find the correct tap.* The tuner is constructed to match the line with a Q of 10, for proper coupling to the tank with a Q of 12 whose values we have just worked out. It is possible to employ either a series or parallel resonant circuit for the antenna tuner. One or the other arrangement will result in the most convenient physical values.

An example of antenna tuner design would be to match a dipole, fed with 72-ohm twin lead, to the unbalanced 50-ohm output of our pi-network. Using *Fig 2* we locate 4 Mc at the bottom and proceed upward until we intersect the 72-ohm point and then read 60 uufds at the left. We might just as well have continued upward and made use of the curve for the parallel circuit but would find that, for this load and frequency, the capacity required would have been unreasonable. The only operation remaining is to set the condenser at 60 uufd and vary the coil in series with it until resonance is hit at 4 Mc.

Connect the 72-ohm line to the tuner and couple in the output of the pi-network coax by means of a three-turn link on the end of the coil nearest *C3*. Reliance should be placed on the field-strength meter when tuning up and *C2* and *L1* should be varied until maximum output loading is effected, leaving *C1* set at 140 uufds. A trifling readjustment of *C3* may be needed if you shift frequency.

By the technique described the values at other frequencies may be rapidly determined.

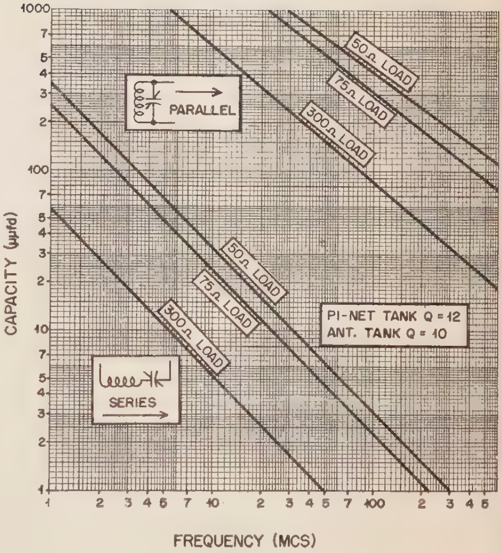


Fig. 2. Correct value of C3 on left.

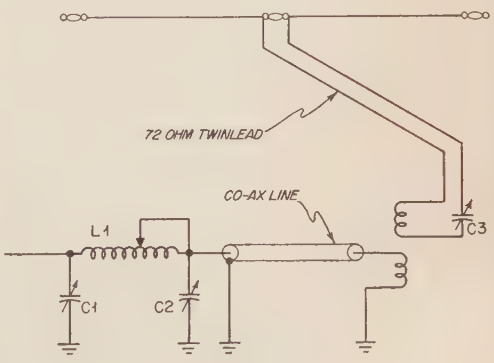


Fig. 3. Matched coupling circuit.

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*Coupling to untuned lines QST Aug 1947 Byron Goodman W1DX.

propagation EXTRA

a report on the URSI-IRE meetings with data bearing on the future of high-frequency amateur radio

When in 1901, Marconi succeeded in transmitting a radio signal across the Atlantic from Cornwall, England to Newfoundland, the question arose as to how the radio signal actually travelled through space for such a great distance. During the fifty-four years that have elapsed since that epic event, scientists and engineers have been intensively studying the problems of radio wave propagation. During this time a considerable knowledge of the ionosphere, the troposphere and the general mechanics responsible for the propagation of radio waves has been amassed. There still remain however, many questions yet to be answered. Research continues to unlock the secrets of the solar system, the ionosphere, and the troposphere. Radio horizons continue to be pushed forward—higher and higher are the frequencies being used for radio communications and longer and longer are the distances being spanned by the higher frequencies.

In early May, a joint meeting of the International Scientific Radio Union (URSI) and the Professional Group on Antennas and Propagation of the Institute of Radio Engineers was held at the National Bureau of Standards in Washington, D.C. At this conference the latest research work in the field of radio propagation was reviewed. Because of the basic interest of most amateurs in the field of radio propagation and because of the important part that amateur radio has played in the past in extending radio horizons, *CQ* reviews in this article the highlights of the discussions at the URSI-IRE conference.

VHF Reception Beyond the Radio Horizon

Prior to World War II it was generally believed that transmission in the VHF range was limited more or less to distances within "the line of sight." During the past few years however, reliable propagation of VHF (30 to 300 mcs.) transmissions from high-power transmitters to distances of several hundred miles beyond the "line of sight" barrier has been demonstrated by an ever increasing number of experiments. Many amateurs are familiar with the so called "big signal" observed on 49.6 and 49.9 mcs. These transmissions originate from Cedar Rapids, Iowa and are being observed by research organizations throughout the country. Mainly as a result of these transmissions it now appears evident that some form of scattering in the E-region of the *ionosphere,* about 50 miles above the earth, is responsible for the extended-range VHF propagation between distances of 600 and 1200 miles. Three explanations have been offered by researchers for explaining this scattering phenomenon, namely;

(1) scattered reflections from the horizontal layers of the ionosphere itself.
(2) scattering from "blobs" of turbulence in the ionosphere.
(3) reflection from meteor ionization trails.

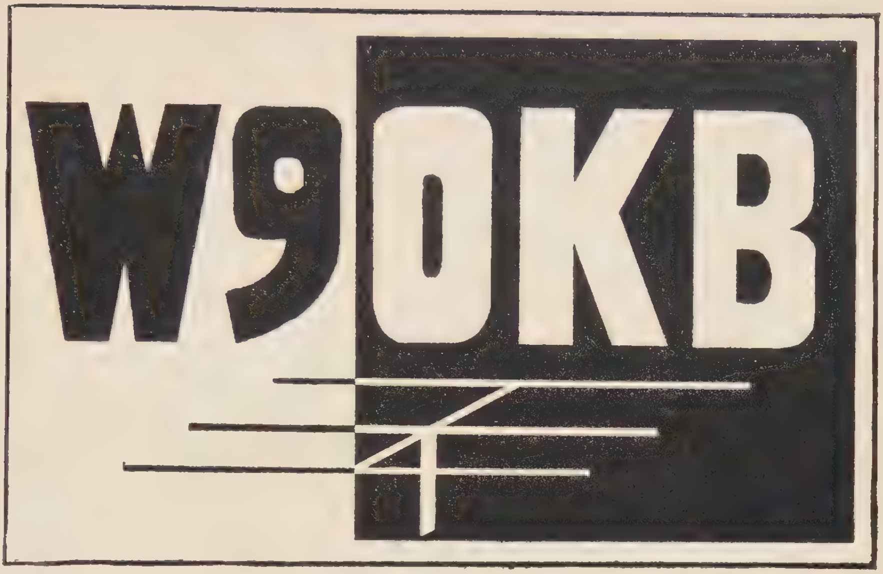
Recent experiments at the University of Newfoundland conclude that the scattering is from "blobs" in the ionosphere, on the other hand experiments at Stanford University in California support the theory that ionization produced by meteors in the atmosphere plays a dominant role in existing extended-range VHF propagation.

While there is still disagreement on the explanation of the scattering mechanism, more and more successful high-power VHF circuits are being implemented for spanning distances of between 600 and 1200 miles.

Extended Range UHF and SHF Reception

Many amateurs on the air today remember the not so long ago when 2 meters seemed to be about the upper limit for practical high frequency radio transmission. Considerable data presented at the URSI meetings indicates that because of a scattering mechanism in the troposphere, between five and ten miles above the surface of the earth, transmission over several hundred miles on frequencies in the UHF (300 to 3000 Mcs) and the SHF (3000 Mcs upwards) ranges is possible. MIT has been successful in establishing a 200-mile circuit using frequencies as high as 5050 Mcs or a wavelength of approximately 6 centimeters. The National Bureau of Standards has successfully

[*Continued on page 110*]



CQ Magazine July 12, 1955
QSL Card Contest

Enclosed is one of my "home-brew" cards—It is silk screened onto thin "wedding invitation" type bristol board. I cut the stencil myself and turned out about 200 cards in one evening. The total cost ran about 2¢ per card and could be lowered by purchasing larger amounts of paper.

The back was printed with a "toy" movable rubber type printing press.

Silkscreening is a very economical method of producing cards and most libraries have some sort of book on the process. Several colors can be used.

As I am a Novice I write the letter "N" in on the card before mailing—this way, when I get my general ticket I won't have to discard any cards.

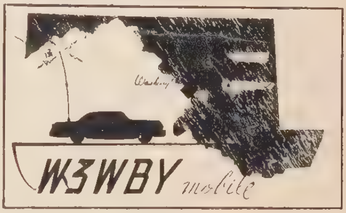
Sincerely,
Kenneth R. Bell, Wn9OKB
6519 Palatine Ave.
Chicago 31, Ill.

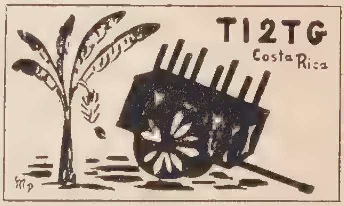
Congratulations to Kenneth Bell for turning out at home a very attractive, economical QSL.

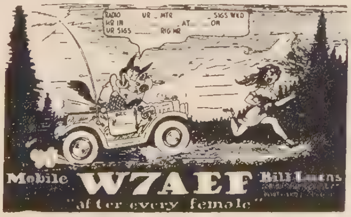
QSL CONTEST WINNER
and runners up

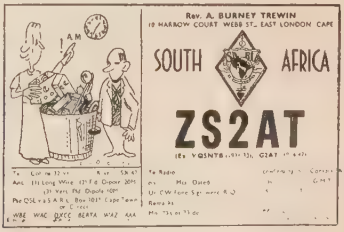
For the information of those who have written in to ask whether the QSL contest is still open: *Sure, it is.* The prize awarded the winner of each month's contest is a 2-year subscription to *CQ*. Keep those cards coming in. Incidentally, it appears to us that not only *more,* but a higher percentage of clever and attractive cards are coming in.

Aside from enclosing a stamped, self-addressed envelope with your QSL's, you'll find your best way of getting returns on your cards is by sending out an unusually attractive card. And it's fun to spread pleasure rather than monotony.





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Phone Patching

for fun

Paul Edwards, W4DX

Box 642, Greenville, North Caroli

How fortunate it is that there are so many different phases of amateur radio for us to enjoy! With me, it's phone patching. When the phone is out of order I'm so discouraged that I QSY to 75 meters and fight the QRM. Otherwise, it's 20 meters; looking for patches coming and going.

Location

Of course my location 80 miles from the North Carolina coast in Greenville, N. C. is a factor. Europe from my location is duck soup with the band in decent shape. And of course the areas VO-2, 4, and 6 are always looking for patches. The rig is a Viking II, HQ-129X and a three-element plumber's delight homemade 85 feet high. Used to be 125 feet high, before Hurricane Hazel flattened it. How much difference with 40 feet less? The sad but true answer: considerable.

Stateside Reaction

In 99 per cent of the cases, the stateside reaction to the patches is terriffic! Husband-wife combinations use the method frequently and know how to take full advantage because they have become accustomed to one-way convers tions.

First-timers usually repeat, "Hello! Hello waiting for the part on the other end t acknowledge in spite of the fact that the on way situation has been explained to them. Bu they soon catch on.

The Collect Call

Only once in over a year of patching have had trouble with a bouncing collect call. Th particular patch went into Ohio and the ca was from Germany. Signals were Q-5 S- plussity-plus. The mother decided she didn want to pay after the call was completed an complained to the operator. The Ohio operat called me back when I was still rag-chewin with the DL4 and I patched her in to prov signal quality.

But that's unusual. A Christmastime patc to Davidson, N. C. (a good 250 miles fro my QTH) from CS3AC in the Azores result in a new acquaintance for me. The Stough there call me every few weeks and ask me t listen out for CS3AC for another chat with so Sam, an Air Force Sergeant. Their gratitude i overwhelming.

The Telephone Bill

On the few occasions when collect calls could not be made I have taken chances with fellow Hams and GI's originating the calls. The phone-patch kitty is about ten percent ahead sofar. In order to mail even money, GI's have sent me overpayments. One now has a bank of $3.36, which he keeps supplied in advance.

Flops?

There have been some patches that were not Q-5. To avoid the flops really takes will power. For example, an F-7 had been trying to get a patch into his home town in South Carolina for three years without success. The band wasn't favorable, but would I try? Unable to turn him down, I lost him immediately after his mother accepted the collect call on the other end.

Usually this happens with GI's who tell me, "I'm paying the phone bill at home and I'm willing to take the chance." After all, how can you tell a man how to spend his money?

But I firmly believe it's the duty of the amateur to turn down any questionable patches, whenever possible, to maintain our reputation.

Local Patches

If you really like patching you can build a local file of 50-odd if your town is any size at all. Greenville, N. C. is 18,000 and I keep about 50 on file. Some are stateside, but I seldom work on them. About a dozen are overseas and are really worth the effort.

GI Lines

One problem is weak phone lines in Germany. However, it's nice to have available lines with no toll when connections are close enough for adequate audio.

Eavesdropping?

To me patching is fun because of the gratitude expressed by most people. But do I eavesdrop? Naturally I have to know when to throw the switches, so I listen. Most conversations are routine, but occasionally one is full of drama or comedy.

The Phone Company

Did I approach the manager of the telephone company and ask his permission to install a patch? No; I haven't discussed it with him. But I figure I give him $30 to $50 in additional business a week with my patch. Why should I apologize to him for having it?

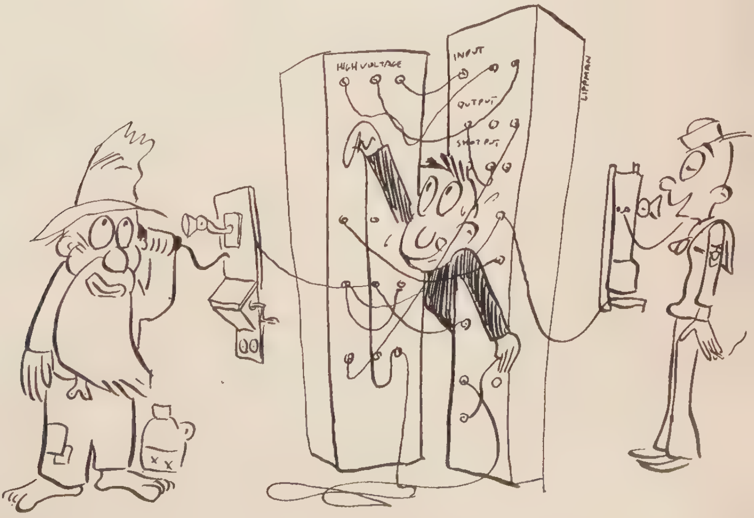
The telephone operators are out of this world. They'll stretch their imagination in every possible way to help make the patch go. Quite often, during lulls in obtaining circuits, I ask the amateur on the other end how he likes the operator. The girls get a big bang out of the praise that follows.

How to Get Results

If you're trying to get patch traffic through, wait until dinner is on the table. Then call "CQ Ramstein, Germany with phone patch traffic." You'll get an answer and miss a hot meal, plus ending up in the dog house if you have an XYL. With leisure time, the same call draws a blank.

It's a great life if you don't weaken and more fun (to me, that is) than any other phase of this fascinating hobby.

Hello, Pater?
I say,
are you there?



If a well-designed operating table is a convenience to the able-bodied amateur, it is much more so to the one who must operate from bed. The one described here should satisfy the needs of many in either category—Editors.

Operating From Bed

Scotty Sorensen, W6GXZ
11300 Elvessa St., Oakland 5, Calif.

The operating table described in this article was designed to solve a specific problem; yet its versatility should make it useful, not only for others with a similar problem, but for anyone who needs a sturdy operating table.

The design followed a logical pattern. I spend most of my time in bed, and I got tired of having to twist myself up like a pretzel every time I wanted to reach the ham gear stacked up on a table beside the bed. Besides, the arrangement made it difficult to tune the receiver accurately.

A hospital table I had once seen suggested a solution of the problem. It straddled the patient's bed, but could be rolled out of the way when not in use. The idea, modified for my special requirements, resulted in the table pictured and diagrammed in the various figures accompanying this article.

Exact dimensions of the table depend upon the bed and the space available. The ones shown in *Fig. 1* were right for me. A few general comments will help in modifying them to fit individual requirements.

Do not skimp in building the table, because the equipment to be placed on it is heavy, and it must be held rigidly, without any tendency for the center of the table to sag or for the legs to bow out. Naturally, its height must be sufficient to clear the foot of the bed. However, most modern beds have very low foot boards; therefore the amount of leg room allowed under the bottom cross piece may determine the height.

Adequate leg room is very important; otherwise, it will be impossible to use the table in comfort more than a few minutes at a time. About four inches of clearance above the legs should be sufficient.

My table is eighteen inches deep, because that is the greatest depth I could accommodate in my room when it was pushed back out of the way. A depth of two feet may be slightly more desirable.

The shelf across the top is essential in eliminating side sway. Also, it serves to support some of the miscellaneous, lighter equipment. With the dimensions shown, gear up to 11¼ inches high can be placed on the lower shelf; however the spacing between them may be increased.

Selecting the proper casters is highly important. Choose "chest" or "truck" casters, the type that are bolted to the bottom of a flat surface by means of a flat mounting plate. They should have fairly large diameter wheels and a smooth, easy-turning action, both in the wheels and in the swivels.*

Two casters on each side of the table are satisfactory, although it shows a slight tendency to "buck" when moving it, until the wheels swivel around in the desired direction. While not too troublesome, this difficulty could probably be eliminated entirely by using four casters on each side. This would also increase the over all stability of the table.

---

* Transmitter cabinet casters should work well in this application—Editor.

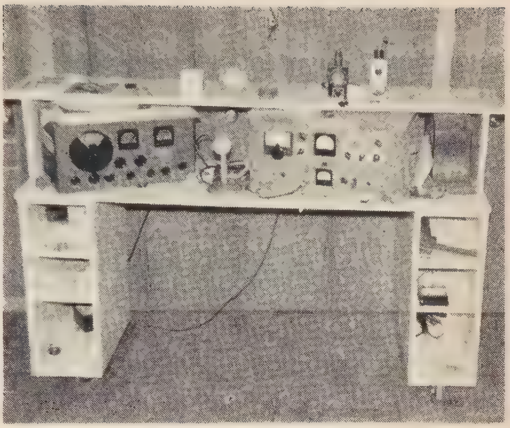
Constructing The Table

The first step in constructing the table is to procure the necessary material, which is tabulated below.

Bill of Materials

- **2 pcs. 18x39¼x¾-inch plywood, with 6x12-inch cutout (A)**
- **2 pcs. 18x27¼x¾-inch plywood. (B)**
- **2 pcs. 18x8½x2-inch pine (C)**
- **6 pcs. 18x8½x¾-inch plywood (D, E, F)**
- **1 pc. 18x64x¾-inch plywood, with 12x¾-inch cutouts on each end (G)**
- **1 pc. 12x68x¾-inch plywood (H)**
- **2 pcs. 10x27¼x¼-inch plywood (I)**
- **4 or 8 heavy duty "chest" casters. (See text)**
- **6 doz. flat-head wood screws, 1¼ inches long**
- **1 pound 1¼-inch finishing nails.**
- **Paint, Putty, Trim.**

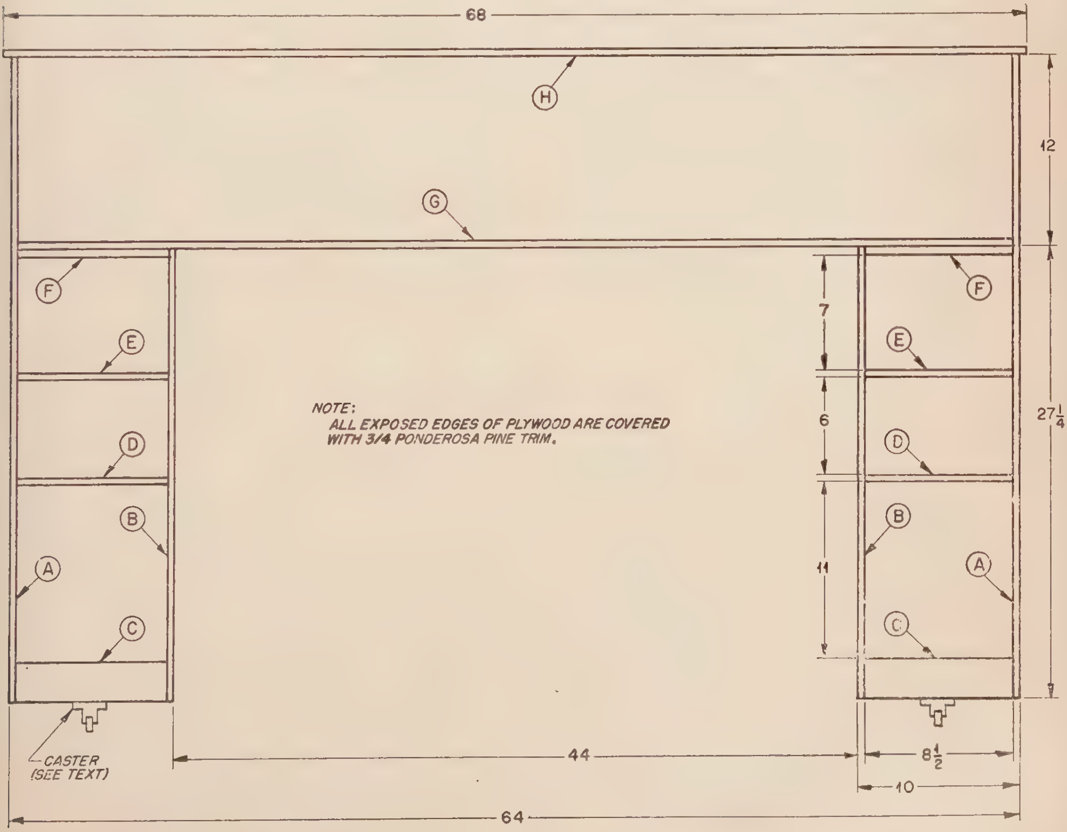
Most lumber yards are equipped and willing to cut the lumber to size when purchased, if you are not equipped to do it yourself.



The sides, consisting of pieces A, B, C, D, E, and F, are assembled first. They are "mirror" twins; that is, one has the cutback piece A on its right and the other one has it on its left.

Pieces C are made by cutting about an inch from the width of three foot length of 2 X 10, which is then cut in half.

Assemble the sides with finishing nails; then, after checking that everything is straight and true, fasten together permanently with the flat-head wood screws. Do not attempt to get by without the screws. The nails will just not hold well enough, if the table is to be moved at all. *(Even greater strength will be achieved by using*



NOTE:
ALL EXPOSED EDGES OF PLYWOOD ARE COVERED WITH 3/4 PONDEROSA PINE TRIM.

a good wood glue on the joined surfaces in addition to the screws—Editor)

In order to eliminate the possibility of splitting the wood with the wood screws, drill counter-sunk clearance holes in the vertical members and guide holes in the horizontal pieces.

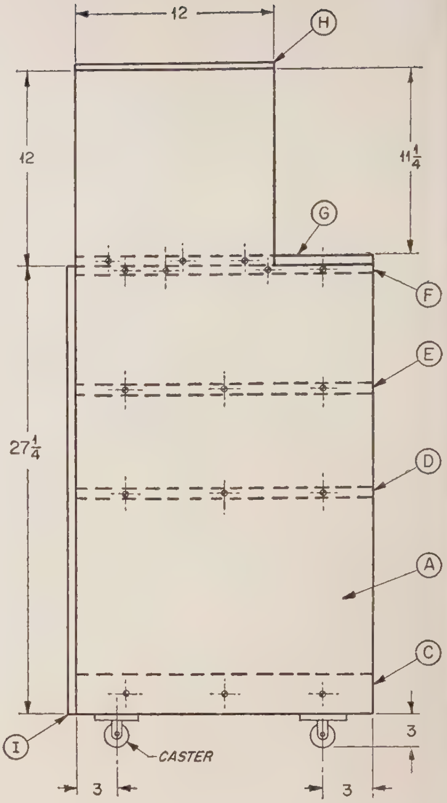
Pieces D and E serve as shelves and their exact positions in the assembly are determined by individual requirements. The ones shown work out well for me. Piece F plays an important part in strengthening the table by providing a wide bearing surface for piece G.

After completing the two end assemblies, I mounted the casters. Then came the most difficult part of building the table, tying in pieces G and H. I laid the two ends on their backs, carefully spacing them the proper distance apart at the top and bottom. Next, I tacked piece G into place with finishing nails. Then, after checking dimensions again, I tacked piece H across the top and screwed piece G permanently into place.

It did not seem necessary to use screws in the top piece; therefore I fastened it down with nails, spaced a few inches apart. I completed the construction by nailing pieces I in place across the backs of the ends and covering all the rough edges of the plywood with ¾-inch wide trim.

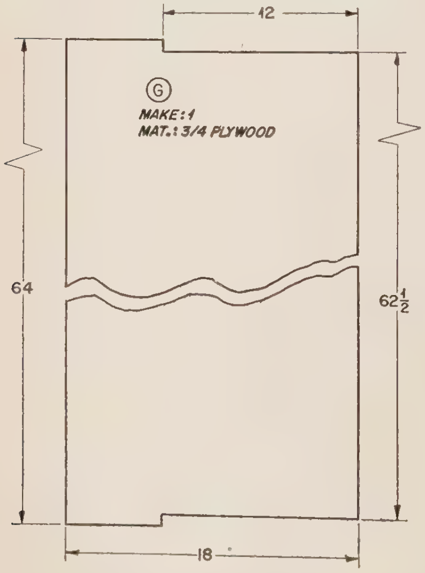
I used strips cut from a piece of Ponderosa Pine and sanded smooth for the trim. This was done to match the other furniture in the room. Commercial trim may be substituted. Another possibility is the stainless steel strip used for binding linoleum floor covering.

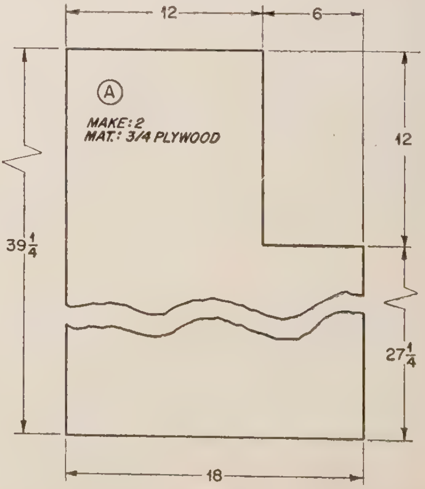
Incidently, when nailing and screwing piece G down, be careful not to allow any sharp points to protrude through piece F, to become a hazard to anyone putting his hand in the top shelf on either side.



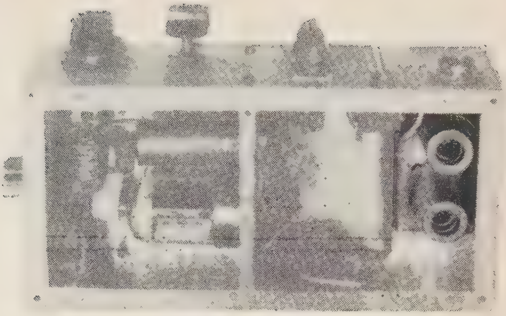
After the table is assembled, drive the head of all visible nails below the surface of th wood with a nail set and fill all nail holes an cracks with putty. When the putty is thoroughl dry, sand all surfaces smooth, adding extra finishing nails in the trim, wherever required t close up cracks.

[*Continued on page 109*]





the Midget Budget Modulator



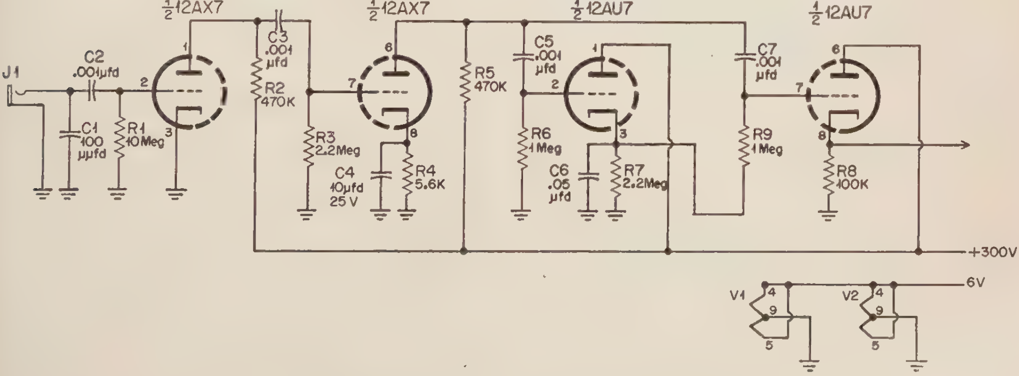
THOMAS E. BELING, W9AEI/5
7558 Hacienda Drive, El Paso, Texas

Most amateur mobile transmitter designs in current use employ a Class B stage to plate modulate the final amplifier. This system has much to recommend it—clean speech can be achieved simply, and the plate circuit efficiency of the final is fairly high; in the vicinity of 70%. At first glance, this would appear to be considerably better than the efficiencies obtainable with ordinary screen modulation (33%) or controlled carrier modulation (50%).

For mobile work, however, efficiency must be defined a little differently than it is for the usual fixed station. Ordinarily, in fixed station work, a given high voltage power supply is available, and the problem is to obtain as much RF as possible, using this power supply for the final. To achieve this, a Class C amplifier with Class B modulator is hard to beat. In a mobile setup, the total power drain from the battery is the limiting factor, and the problem is to get as much power output as possible with a given battery drain. Using this criterion, the filament and plate currents of the modulator tubes become important.

In order to compare controlled carrier screen modulation and plate modulation for mobile use, let us assume that a 10-watt modulated output is desired. This is a reasonable value of power to obtain using the popular 300 volt, 100 ma. power supply. For plate modulation, the following assumptions are made: Class C efficiency, 70%; Class B efficiency, 60%; modulation transformer efficiency, 85%, and power supply efficiency, 60%. Running through the calculations shows that the high voltage input required to obtain a 10-watt output (sidebands and carrier) is 19.0 watts. This corresponds to a battery drain of 31.6 watts, or 5.3 amperes from a 6-volt battery. If controlled carrier modulation is used, and a final efficiency of 50% is assumed, the corresponding figures are 20 watts high voltage input, and a battery drain of 33.3 watts or 5.6 amperes. These figures show a slightly higher efficiency for plate modulation. However, if the heavier filament current of the plate modulator is taken into consideration, it will be seen that there is a slight advantage to controlled carrier.

[*Continued on page 80*]



Schematic for the midget screen modulator.

DX YLs at YLRL Convention were KL7RN, Jeanne, who flew from Alaska, and KZ5DG, Grace, vacationing Stateside from the Canal Zone. Here KL7RN displays certificate awarded to YLs attending convention making them charter members of all future YLRL conventions. Right, KZ5DG holds her certificate received for faithful service to YLR as D/C.

Two of the lucky winners at YL-OM banquet. Left, W6LBO, Mary, with painting done by OM of W6NZP, Evelyn. Right, W6JZA, Elsa, with main prize, SX-99 receiver. W7LCS photo.

W6UXF, Enid, and her "Alpine Dancers" entertained at YL-OM banquet with Bavarian folk dances.

First International YLRL Convention

Monitored by

Louisa B. Sando, W5RZJ
Jicarilla Apache School, Dulce, New Mexico

By car, train, plane and wheelchair the YLs descended upon the Miramar Hotel at Santa Monica, Calif., on June 24-25 for the First International Convention of the Young Ladies' Radio League. Enthusiasm and excitement ran high as one after another registered and fell to rag-chewing. For many it was a happy reunion, for others a thrill to meet in person for the first time after QSOs and contests.

Registration began on Friday afternoon and an informal reception was held in the YLRL suite at the hotel. A Ham station was set up in the suite, courtesy of Henry Radio, and refreshments were served by W6LBO, Mary, and W6KYZ, Ann.

Saturday morning the convention got off to an early start with registration at 9 a.m. While the OMs took a tour of the Collins Burbank factory and NBC studios, the YLs gathered for the YLRL business meeting. On our way into the Palm Room each YL was presented with a lovely copper bracelet bearing the YLRL insignia. These were souvenirs of the First International YLRL Convention, compliments of

W6UHA, Maxine, receives souvenir copper bracelet from W6QYL, Martha. All the bracelets were made by Martha and her committee, gathered behind her — (from left) W6QGX, K6GMX, W6DXI, W6PJU, KN6EJE. Martha wears her wedding gown which she modeled during fashion show. W6PJU, Mildred, out-going president of L.A. YLRC, was official hostess for the convention.

YLRL Convention luncheon. W6KER, Gilda, presents W6CEE, Vada, with orchid lei and kiss on each cheek as W6UHA, Maxine, smiles approval.

The photos on these two pages show the YLs attending YLRL Convention luncheon.
Rear: K6ACF, W7PUV, W7SNP, W6AVF, K6ELI. Center: K6KCI, KN6JRL, W6MFP, K6EIA, K6BUS. Front: W6NAZ, W6CYZ, W6BDE, W5CGE.

Rear: KN6KEK, KN6HRW, W3PVH, W6A K6ANG. Center: W7ULK, W5WUE, W6Q W0PIK, Charline (no call). Front: W6DXI, K6B W3LSX/0, W5SYL, W6KYZ.

the Los Angeles YLRC. All were handmade by W6QYL, Martha, and her committee (see photo). YLRL officers received bracelets handcrafted in silver.

Convention Chairman, W6UHA, Maxine, as mistress of ceremonies welcomed the YLs, then introduced the mayor of Santa Monica, who also welcomed us to this city. YLRL President, W6CEE, Vada, then presided over the business meeting.

W6WSV, Carol, as first vice president of YLRL, told us of the beginnings of the League. W6UXF, Enid, YLRL's first secretary-treasurer and originator and editor of *YL Harmonics*, gave a delightful little talk on the conception, labor pains and birth of this "baby girl" and expressed her pleasure at how it has grown—from an original 13 members to nearly 600. W7GXI, Marge, one of the earliest members, displayed her original certificate of membership in YLRL.

W3MSU, Ethel, founder and first president of YLRL (see "YL's Frequency," CQ, Nov. '54), was unable to attend, but sent a letter which Vada read. Vada then announced the award of a lifetime membership in YLRL to W3MSU as our founder (the suggestion of W7JFB, Miriam). She also displayed a handsome acrostic executed by W2JZX, Vi, which was to be given to Ethel.

W3PVH, Betty, read the secretary's report which had been forwarded by W3UUG, Miriam. The membership drive during the last year resulted in 85 new members. The winners in this contest were: W5RZJ, top individual award for gaining the most new members (a free convention ticket); KZ5DG, Grace, chairman of the district with highest percentage increase during the period of the contest; t Los Angeles YLRC as the club gaining t most new members, with W6WSV, Car winning the prize within the club. As of Ju membership was divided thus: W1-52; W2-5 W3-33; W4-69; W5-42; W6-86; W7-45; W8-3 W9-36; W0-48; VE-12; KH6-4; KL7-9.

W0ERR, Ann, made the proposal that book be compiled about the YLs and t YLRL. This was greeted with unanimous a proval by those attending and your editor w requested to undertake the project. (We wou be happy to receive ideas and suggestions this from any readers.) K6BUS, Marge, al has suggested a YLRL yearbook.

Merit Awards

W6CEE, Vada, awarded certificates (at t suggestion of W6JMS, Lucille) to a numb of YLs for outstanding service to YLRL du ing the past year. One was given to W4JC Anita, for her unending devotion to the j of revising the Constitution and By-Laws. (H certificate was presented to her at St. Peter burg, where she was guest speaker at the 4 District YLRL Convention June 11-12, spo sored by SPARC-YLS in conjunction with t Southeastern Division Convention.)

One went to W6NAZ, Lenore, for editin and publishing the YLRL Directory. Anoth was received by W6UHA, Maxine, for makin the dream come true regarding a YLRL Co vention. Others went to W9YBC, Gloria, ar W6LBO, Mary, for the tremendous job the did in publicizing YLRL, members and Co vention, in newspapers and magazines throug out the country. (Between them they sent o around 300 individual news stories.)

Rear: W6MWU, KN6ELO, Gertrude KN6???, W7SBX, W6HEG. Center: KN6HMP, K6EXV, W3CDQ, W6JZA, K6GQW. Front: W6FEA, K6GMX, KN6LPM, K6EJE.

Rear: KN6IHD, W6PJU, W6EHA, W6JCA, W7GXI. Center: W7KOY, W6JCL, K6DRS, W6JMC, W6REF. Front: W6SGL, WN7VWU, WN8UAU, W7LCS, W0ERR.

Rear: W6QOG, W8UAP, W0TYB, W6DPB. Center: W6QBK, W6WRT, W6WSV, W6UXF, W6GAI. Front: W5RZJ, W6QMO, W6LBO.

W1QON, Eleanor, and W5RZJ each received a copper necklace and earrings, made by W6QYL with YLRL insignia to match the souvenir bracelets, in appreciation for cooperation in publicizing YLRL and the Convention.

The morning session was brought to a close by presentation of the YLRL Convention song, composed by W6UHA, Maxine. It was sung first by W6REF, Betty, accompanied by Maxine on the piano, then we all joined in singing it. Since we're sure you'll enjoy it also, the song is included here.

YLRL Convention Song

The girl at the key has a romantic touch.
The world that she knows needs goodwill so much!
From Capetown to Nome and from Delhi to Rome,
By voice or by code
Reaching foreign abode.
From QRV to QRT;
Through QRM, still QTC.
This YL lass with a task to do,
To YLRL ideals true!

Luncheon Program

After an hour's recess we again gathered in the Palm Room for luncheon. Each of the long tables was handsomely decorated with flowers and unique ceramic "Hamshacks" designed and created by W6MFP, Agnes, complete with multi-element beam antennas made by K6GMX, Jayne.

By each place setting the YLs found a certificate rolled and tied with blue ribbon. The certificates read: "First International Convention, Young Ladies Radio League at California. We proudly present this certificate to you as a memento of your attendance at our initial convention held June 24, 25, 26, 1955, at Santa Monica, California. Your presence makes you a charter member of all future YLRL conventions. Los Angeles Young Ladies Radio Club."

First on the program was a delightful fashion show presented by Madge Warnick of Santa Monica. After many ohs and ahs over the beautiful collection of clothes the show was brought to a finale by W6QYL, Martha, displaying her lovely wedding gown, the material for which her OM Noel had brought from Japan and Martha had made herself (see photo).

Head table, YLRL Convention luncheon. From left: W6KER, YLRL vice president; W6CEE, YLRL president; W6UHA, convention chairman; W6QOG, L.A. YLRC incoming president; W3PVH; KZ5DG.

Installation of Officers

Installation of the new YLRL officers had been planned for this time. Orchid leis, arranged for by KH6AFN, Jeanette, and gift of the YL Club of Honolulu, had been flown from Hawaii by the OM of W6SHR, Lorraine, for presentation to the incoming officers. At the last minute W9LOY, Cris, our new YLRL president, could not get away, nor could incoming officers W9YBC, W0MMT, W1TRE and W3RXV attend. W5SYL, Iva, and W6FEA, Gertie, as new chairmen for the fifth and sixth districts, received orchid leis from Vice President W6KER, Gilda. W0ERR, Ann, accepted one for W0MMT, Marie, incoming secretary-treasurer. W8UAP, Marion, accepted one for D/C W8LGY, Ruth. W6CEE, W6UHA, and W6KER each received leis.

Each of the outgoing officers present was awarded a handsome certificate of tribute for faithful service to YLRL.

Personal greetings were brought to the YLs by your column editor from CQ magazine, and from W1QON, Eleanor, by letter. W3CDQ, Liz, told of her trips to Europe and meeting YLs there, while W6NZP, Evelyn, reported on her trip to Africa and being entertained by the ZS YLs. KL7RN, Jeanne, brought greetings from Alaska and told of the part Ham radio played in her rescue from a mountain-side plane crash landing last year. KZ5DG, Grace, told of YL activity in the Canal Zone.

W8UAP, Marion, drove to the convention from Flint, Mich., with daughter WN8UAU, Retta, and another daughter and son, mobiling along the way.

Grand prize at the luncheon was the Gonse Communicator, won by KN6IHD, Gwen.

Late in the afternoon we again recessed for photographing, rag-chewing, resting and glamourizing for the evening.

YL-OM Banquet

7:30 p.m. found the Palm Room again filled for the YL-OM banquet. With YLs, OMs and guests we numbered nearly 150. Long tables filled the room, each decorated with the little brown and white Hamshacks and with green fronds strewn with numerous lovely little orchids, the gift of KH6AFC, Hazel. Many of the orchids promptly were fastened to dresses and coat lapels as we acquired an Hawaiian air.

Following an excellent roast beef dinner W6UXF, Enid, and her OM, W6ZD, entertained with their "Alpine Dancers," performing Bavarian folk dances in colorful authentic costumes made by Enid and the other dancers.

W6UHA, Maxine, was our charming M.C. She introduced Southwestern Division Director W6EKM, Walter Joos, and FCC supervisor Bernard Linden. Mr. Linden spoke of the early YLs, how there were only six in all of California (out of 1600 amateurs) in 1922 when he gave the exam to Gladys Daly, first YL in San Francisco. He commented on how the YL's place has changed since then—from novelty to acceptance.

Main speaker for the evening was K6BJ, John Reinartz, famous amateur well-known to thousands. He delighted all with his account of the early days in Ham radio, how he started out as a boy—with much help from the telephone company as a source of wire, batteries, etc. His contributions to radio—design of the regenerative receiver, first successful trans-Atlantic tests, and exploration of the short waves while in the Navy, are fascinating records of radio history. He also told us how he met Gertrude, his XYL—via Ham radio, while visiting

[*Continued on page 111*]

...But You Can't Get It!

John W. Campbell, Jr., W2ZGU
1457 Orchard Rd., Mountainside, N. J.

I have a number of mighty useful gimmicks around the home station here that I can't write up. Reason: Their function centers around the use of some material, or some device, which is manufactured, but which you can't find in any radio parts store or order from any manufacturer. In some instances, you can get it by ordering it direct from the manufacturer—but readers generally object to articles specifying some component that isn't reasonably available. Example: There's a surplus unit manufactured during the war by Western Electric. The part number is D-172155-GY. You can't order it from the manufacturer, and if you find it in a surplus store, it's pure luck—you can't write to any outfit I know of and get it. I happens that my speech pre-amp has a magnificently efficient compressor-clipper circuit based on the use of D-172155-GY, a unit (somewhat smaller than the 40-ma. selenium rectifiers) which does a job no other unit can do with less than three vacuum tubes and associated components.

The problem boils down to this: *If* I could write articles specifying component XY-23-Z, or what-not, manufactured by the Framis & Moisenbur Co., that would start a demand for Framis & Moisenbur's unit, the demand would lead radio parts dealers to stock it. The fact that it was stocked and available would lead to more use of it. Then it would be widely stocked, and *then* it would be reasonable to write about units using it.

But how do you start the demand? Darned if I know! I can tell you of some of the units that are available—sometimes. Or should be available. Anybody got any suggestions what to do about making these dream-items become truly available?

Thyrite

For instance: General Electric manufactures a material trade-named *thyrite*. It's made of silicon carbide crystals in a binder—sort of like a grindstone, in effect. The material has the interesting characteristic that it does *not* obey Ohm's Law. Ohm's law says that the current through a conductor is equal to the voltage applied divided by a constant, called the resistance of the conductor—the familiar $I = E/R$. Thyrite doesn't follow that law; instead of being linearly proportional to E, the current increases as a higher power of E. It may increase as the square of the voltage, or anything up to about the ninth power of the voltage, depending on the way the thyrite is prepared. The result is a highly non-linear resistance.

It makes the most wonderful voltage-controlling element imaginable; it is a little lump of resistive material, and at 100 volts, a particular unit may have 1,000,000 ohms "resistance," while at 150 the "resistance" has plummeted to 1,000 ohms. Put in series with an ordinary resistor, a thyrite unit will hold the voltage applied to the screen grid of a tube very nearly constant, key-up or key-down. Larger units could be put across a power supply to hold the voltage nearly constant, since they enormously increase their current drain with a slight increase in voltage, then drop to almost zero drain if the voltage falls off. The stuff is inherently cheap, too.

There's a piece in the MD-7 modulator for the ARC-5 Command transmitter system; it's a stubby red-painted cylinder with sputtered brass ends, labelled "8070". That's the overmodulation damper—an an effective one. And that's all it takes to do the job; one ¾-inch cylinder of thyrite!

Thyrite can be made up to have almost any characteristic desired; units capable of handling hundreds of watts, or microwatts—units having their voltage-regulation characteristic at a few volts, or half a million volts. Units that act to extract the square root of any input voltage—or the ninth power of the input voltage.

I've gotten hold of a few samples; they're wonderful.

But you can't get 'em on the market, so I can't specify the use of "G.E. thyrite unit 573-B-14" or anything like that. For voltage regulation—overmodulation control—a thousand uses in electronic equipment.

Incidentally, thyrite *is not* the "globar resistor" type of unit. The "globar resistor" is a *temperature* controlled device; it has a reaction-time of several seconds. Thyrite is directly sensitive to voltage, and its reaction time is a tiny fraction of a split microsecond. It will follow r-f voltages without the slightest trouble; it behaves as it does because it's simply an almost-infinite complex network of silicon carbide diode rectifier crystals randomly connected in so many different accidental directions that it conducts both ways, in all directions—but has the effect of operating always in the highly non-linear "toe of the curve" region of crystal-diode conduction.

Germanium Diodes for V-R

There's another crystal-diode gimmick that should be made available as a voltage regulation device. Ask any germanium-diode manufacturer, and he can tell you that if you apply voltage to a germanium diode in the reverse direction, through a resistor, there is a breakdown point at which reverse conduction sets in. And . . . a germanium diode *conducting in reverse* acts very much like a gas-discharge voltage-regulator tube. Say you have a diode that breaks down and conducts in reverse at 50 volts; if the voltage falls below 30 volts what happens? Then somewhere between 50 volts and zero volts, the diode must reach a stable reverse-conduction voltage.

But whereas the lowest voltage-regulation voltage achieveable with gas-discharge tubes is about 60 volts, germanium and silicon diodes can be made to have stable voltage-regulation characteristics down to almost any low voltage wanted. The diode manufacturers could, very readily, label their diodes for inverse current voltage-and-milliampere characteristics; such units would be wonderful for grid-bias control. At present, my own system for grid-biasing is to have a negative power supply supplying about 15 mills, then each tube in the rig that needs bias has an appropriate gas-discharge tube hung on it. The gas tube will be kept conducting by a couple of mills—but it will absorb many milliamperes of grid current.

However, an 807 or 6L6 or the like doesn't call for –65 volts, and until some of the diode manufacturers will label their diodes for inverse current voltage regulation—I can't take advantage of the germanium diode voltage regulation characteristic.

If you stop to think of it, practically all the circuitry you put into a rig is centered around the problem of *control* of power. The power-pack is the source of raw power—and you need regulation of that power even there. The VFO's job is to control the frequency of flow of some of that power; the final's job is to impose that frequency on a massive flow of power. Control and regulation is the whole essence of a transmitter. That's why regulation devices can simplify transmitter design so much!

6AQ5-HV

Another very simple thing that the Hams could use—as well as a lot of other electronics workers!—is a tube of my own invention, which I call the "6AQ5-HV". It's a perfectly standard 6AQ5, except that the heater-to-cathode insulation has been increased to allow 600 volts on the cathode, while one end of the heater is grounded. Now there's a television rectifier tube that is used as a damper diode; it has a standard heater system, and the insulation from heater to cathode is rated at 4000 volts. It would save a lot of transformer problems if such high-voltage heater-cathode insulation were a little more common; certainly the fact that it exists indicates it can be done.

Maybe my dream-tube would cost a few cents more; for that I'd be glad to pay. One of the handiest ways of controlling the drive to a final stage is by using a pentode or beam-tetrode driver, and varying the screen voltage of the driver. Since the screen voltage is pure d.c., you can haul the leads all over the place, and insert the control wherever it happens to be handy; it allows delicate adjustment, doesn't cause unbalance of r-f systems, and works beautifully.

But . . . to do a good job, if you're using a fairly husky driver, you need something that'll control 15 to 30 milliamperes of screen current. You can buy potentiometers that are rated for that sort of load . . . if you've got $10 or so to invest.

Given the 6AQ5-HV I'm talking about, however, I could hang the driver screen on the cathode of the tube, and hang the 6AQ5-HV grid on a ½-meg, ¼-watt standard, cheap potentiometer. I suggest the modified 6AQ5 for the job, because it's a neat, miniature tube that's manufactured in such quantities already that the tube is cheap. It can handle real current; given the insulated cathode-heater modification, no extra filament line would be needed, and a lot more voltage regulation would be practical in rigs.

Yes, I know the 6AS7 has a reasonable heater-cathode insulation, and is designed for voltage-regulation service. I also know the tube is big, clumbsy and expensive, and draws more filament current than is needed for many jobs. I don't want to regulate 200 milliamperes all the time; sometimes I need only 20 mills—for that a 6AS7 is too big and expensive.

Again: Many times what one needs in a certain circuit is a voltage of about 200—say between 175 and 225. But while the exact voltage isn't critical, making it *stay* whatever it *is* is critical. Now three of these little neon tubes about the size of a grain of puffed wheat will give you about 200 volts, and regulate about 2 milliamperes beautifully. They take only a tiny amount of space, are very cheap and quite reliable at whatever voltage the individual tubes happen to pick. You can't predict exactly what voltage any individual tube will fire—somewhere between 60 and 75 volts. But whatever voltage it picks, it'll hold on to.

But 2 mills isn't enough current! Agreed—but hang it on the grid of my proposed 6AQ5, and the cathode of that 6AQ5-HV will give you a nicely regulated supply at pretty fair current. It'd be a big help in mobile rigs, where voltage regulation of the supply tends to be more than slightly uncertain. When the supply line goes from 6.5 volts to 7.8 volts, VFO's don't behave quite predictably.

None of these suggestions herein call for the invention of something unknown; every one of the items is readily available already. In the case of thyrite, GE is already manufacturing the stuff, and so are other companies, under other trade-names. All that's needed is to make it available, and label the units so Hams can design circuits around them. The germanium diode regulation problem involves, actually, no more than adding a few lines of printing on the characteristics sheet that goes with the present units. You can measure the back-voltage regulation on diodes you now have at home—but you can't, since you haven't the manufacturer's life-test equipment—determine the maximum useable back-*current* for reliable service-life.

The 6AQ5-HV proposal requires only a minor change in a presently available tube design, using techniques that are already known and currently in use in other tubes manufactured by the same tube-makers.

But the changes that would result in electronic techniques might be mightly interesting. The regulation and control circuits would show some major changes!

Undoubtedly there are many such laboratory devices that other Hams know about, that I haven't heard of. If they're strictly one-purpose devices, the marketing problem wouldn't make them commercial. There are, I know, trick tube-designs that would be wonderful for harmonic generators, and grid-controlled electron-multipliers that have special uses. (I'd like to get my mitts on one!) These aren't what I'm talking about; I mean the practical, already-developed devices that could be used in a thousand different ways . . . if only we could get them!

What devices in that class do you know of?

THE O.T. TRANSMITTER

[*cont. from page 35*]

tubes will require the top plate of the shielded enclosure to be built up over the tubes, an easy job with some ½″ aluminum angle and a couple of pieces of scrap aluminum. Be sure to allow enough room for the plate connector and lead. An alternative is to recess the sockets, mounting them below the chassis.

For information, the dimensions of some of the more popular tubes are as follows:

35T—Overall Height (includes base prongs and plate connection)—5½″ Diameter—1-13/16″
812A and 8005—Overall height—6-13/32″—Diameter—2-7/16″
V70D—Overall height—7¼″ Diameter—2-1/16″

The following table shows some of the tubes that may be used and may assist in deciding which type to install.

Type	Max. HV	Fil. V	Fil. A	Two Tubes Output	Price per pair
35T	2000	5	8	400 W	$21.00
TZ40	1500	7.5	5	330 W	9.00
812A	1500	6.3	8	380 W	10.00
5514	1500	7.5	6	400 W	9.90
V70D	1750	7.5	6.5	450 W	19.00
8005	1500	10	6.5	440 W	16.80
T55	1500	7.5	6	340 W	19.00

One final word of warning. Don't waste money on "surplus" triodes even if they seem to be a bargain. After much unpleasant experience, the author has just about decided that some obscure regulation must require that surplus triodes be gassy! They produce a lovely glow when the plate voltage is applied, but there their usefulness ends.

Letters . . . to the editor

England

Dear O.M.,

Thought I'd just sit down and write to say how I appreciate "CQ" each month.

I like your chatty Editorials — they have a nice "at home" air about them. Give us some more of those W4HXL covers, too. The one on the June issue sums up Ham Radio nicely. I don't look like the guy on the left (I hope!) and I *know* the only YL I've ever worked doesn't look like the one in the picture. Nevertheless, I have had some shocks!

The Novice Shack is a great favourite of mine. I've only been licensed just on four years and still class myself as a Novice. We've no such thing as a Novice license over here, but I know some who would qualify if we had!! And they aren't all youngsters.

DX and Overseas News is good too, but could we have reports arranged by bands under suitable headings? i.e. 1.8, 3.5, 7, etc.

The little things in "CQ" appeal to me. Those subscription notices are gems, particularly the one on page 89 of the May issue. The Lippman cartoons demand an encore! Ham radio is being made into a serious enough business, what with TVI, BCI, the phone and cw men at each other's throats, NBFM versus SSB wars, high and low power dittos, and so on. Let's have a good laugh out of our Ham radio for a change. The whole world is a grim place without making our priceless hobby the same. I'm off the air during TV hours (due to my own laziness) but I don't cry my eyes out over it. I've never worked any DX — so what? I can chatter to the chap a couple of miles away on 160 phone without the QRM, QRN, QSB, etc. *AND* the QSO will go on longer than the accepted "GA, TKS, UR 599, QRU, BCNU, 73" stage. I say, why worry, it's only a hobby after all, and we shall go to "the other place" in the end anyway.

But I'm supposed to be telling you that I like "CQ," not moralising on Ham radio.

73 now, and keep up the good work.
F. Allan Herridge, G3IDG

Our Cover

Cecil Gregson, W9CNN, is justly proud of his ham shack. The shack is isolated by solid glass panels and a glass door, the outlines of which show in the photo. In order to keep the equipment cool a 1½ ton air conditioner had to be installed just for the shack.

Among the equipment in the photo are a Motorola 468.5 Mc Citizens Band f-m transmitter-receiver, a Motorola f-m transmitter-receiver for 147.5 Mc, a Motorola monitor squelch receiver for 29,640 Kc, a teletypewriter converter, a Magnacorder tape-recorder which is hooked up to all the transmitters, receivers and the telephone, a Collins 32V2 and 32V3, Collins 75A2 with Sidebank Slicer, Collins 75A3, phone patch and control panel, Collins KW-1, Central Electronics 20A SSB Exciter, Radio Products 100 Kc Panadaptor made specially for the Collins 51J3, 51J3, 5″ Millen Scope for tuning RTTY signals, Collins 706A3 dual diversity FSK converter, Berkeley frequency meter for checking the transmitter frequencies to a few cycles (0-42 Mcs.), second Collins 51J3 and scope for RTTY tuning, Collins 709D1 crystal controlled FSK RTTY exciter, model 26 Teletype page printer. At the left are two walkie-talkies.

The antenna farm at W9CNN is built pretty much in one pile on a 61′ Vesto tower. At the top is a 10 meter coaxial antenna tuned to 29,640, this goes to about 95′ off the ground. Under that is a 10 element 2 meter Telrex beam (at the 75′ level), below that is a three element 10 meter Telrex beam, then a three element 20 meter Telrex beam. Cecil has a new beam about ready to go up on the tower now which will move all of the others 10 feet higher. This is a Telrex 40 meter three element beam cut to 7140 Kc (the RTTY frequency) and will have a swing of 72 feet.

← Antenna installation at W9CNN

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2 June 1955
Burbank, California

CQ Magazine
67 West 44th Street
New York 36, New York

Att: Editorial Staff

"The facts of this story are true. Nothing has been changed to protect anybody.

"This is the city! It's Sunday, 2:47 P.M. I am a Ham ---- and I needed a 1¼ x 3 inch plastic coil form in the worst sort of way. I was spending that beautiful afternoon in the shack, building a rig. Getting a coil form would be no strain (I thought) as I jumped in the ole mobile and headed for the nearest 'war surplus' emporium. The first stop proved a bit of a shock when I found that the plastic supply had 1 inch and 1½ inch tubing—but nothing in 1¼ inch—that was on order and would be in in a few more days! Two more stops revealed more shocking facts. Where they had the 1¼ inch tubing, the price was approximately 75¢ for a 6 inch length of tube. Seems there is a 25¢ cutting charge. I was almost desperate enough to pay this price when I decided to stop at the local drug store for a coffee break.

"As I was eyeing the shelves in search of an inexpensive answer to my problem, I noticed a well packaged blonde at the prescription counter and the druggist was handing her a small round plastic tube of ---- *A SMALL ROUND PLASTIC TUBE??!!!!!*

"Immediately I cornered the druggist and demanded the facts! Seeing that I had him with the goods, he led me to his cache and opened a drawer close to the drug store safe. There were hundreds of plastic tubes in all sizes and lengths. I selected one and measured it—exactly 1¼ x 3 inches—perfect!!!!!

"I knew then that no Ham need ever be without plastic coil forms again for here was a supply in all lengths and sizes. The price that he was asking for this little prescription pill tube was another shock that I wasn't prepared for—it cost me all of 10¢! That beats the price at the local "wholesale" radio stores.

"I found the coil forms to be made of a hard plastic that drilled nicely and once the coil was in place, the coil dope adhered with a vice-like grip. They also have a solid bottom which makes for easy mounting.

"Just thought you and the rest of the gang would like to know about this."

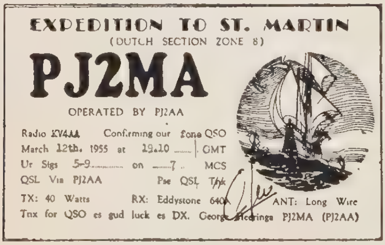
73,
"Ernie" L. Hollis, W6ZGZ

the

PJ2MA story

For quite some time I had been planning to put St. Martin Island on the air and had been gathering information which convinced me that this spot should qualify as a "separate country" on the DX lists.

Early in 1955 I had received a letter from Jules, VP9BM, expressing his desire to go to St. Martin and requesting my help toward obtaining a Dutch license for this spot. This resulted in a letter to VP9BM from the Director of Communications in Curacao advising that no licenses will be granted to foreign hams unless they have held a station in the Dutch West Indies for ten years or more (Ed note: We understand that this law will shortly be amended and the restrictions eased).



EXPEDITION TO ST. MARTIN
(DUTCH SECTION ZONE 8)

PJ2MA

OPERATED BY PJ2AA

Radio KV4AA Confirming our fone QSO
March 12th. 1955 at 19.10 GMT
Ur Sigs 5-9 on 7 MCS
QSL Via PJ2AA Pse QSL Tnx
TX: 40 Watts RX: Eddystone 640A ANT: Long Wire
Tnx for QSO es gud luck es DX. George Heeringa PJ2MA (PJ2AA)

My request for a St. Martins license was readily granted and I was issued the call of PJ2MA.

Time did not allow wide publicity of my trip via ham radio magazines but the word was widely spread thanks to W1FH, W1PST, KV4AA and the PJ stations.

The XYL and myself departed from Aruba via KLM plane on March 9th. After on overnight stop in Curacao we took off on the three and one half hour flight to St. Martin where we arrived at 1630 GMT on March 10th.

Getting right to work I found that my only choice of antenna would be a long wire running from one pole of the radio station to a telephone pole close to the police station. With help from the Director of Communications in Curacao and with cooperation from the chief of the St. Martin radio station line current was made available to me between 1130 and 2300 GMT. This service was invaluable as there is no public electricity available during daylight hours.

After switching on my *Globe Scout* and my *Eddystone* receiver I found that the line voltage was only 80 volts. This posed a problem unti a step-up transformer was lent me by the radio station. With all this trouble I was unable to get on the air until the next day.

At 11.28 GMT, March 11th, the first CQ was sent by PJ2MA, on twenty CW, and immediately answered by W5UFO who was the lucky "first". Additional early contacts followed in this order: W5CEW, W4LX (A3), W5EFC (A3), W7SIB/4, W5DML, W5CEC, W3SOH W3MDE, VP9BL, W2GT, W6KQY (A3) W6SYG (A3), W5ALA (A3) and W2JT (A3).

George Herringa, PJ2MA, the third day on St. Martin (no time or current for a shave).

At this time I was being initiated into the difficulties of operating a ham station in St. Martin, especially from my present location. Key clicks from the commercial station made reception impossible and I had to QRX every time the operator had traffic. Then I found I was receiving a BC station on all bands. What was this? You guessed it, the St. Martins BC station was on the air and again I had to QRT. Nighttime operation was also difficult due to low line voltage (I was running 8 watts at times but the 599 reports continued!!). Also, an especially aggressive breed of St. Martin mosquito persistently dive-bombed us from all sides.

20 meters proved the best band, being wide

Beside the police station was this powerful BC station giving PJ2MA rugged QRM.

open for W's most of the day, and most contacts were made here. Fifteen was not too good as my xtal on 21075 was too low for phone work and my other frequency was in the middle of the U. S. phone band. Forty meters was a hodge-podge of latin QRM but many "short-skip" friends in PJ-land, plus KV4BB and KV4AA, were worked on this band.

My plan was to stay in St. Martin for two weeks but even before I arrived I found that the return planes to Aruba were already overbooked and I considered myself lucky to obtain two seats on a chartered plane which left for Curacao on March 17th.

So-o-o, on March 16th at 0025 GMT I pulled the big switch at PJ2MA, after a last contact with W3AIS. A total of 300 QSO's were made in the following countries: W, VP9, KZ5, YV, PJ2, G, HC, CO, CN8, KV4, HB9, VE, VP2, KG4, HH, F, OE, FA8, PA0, PY, XE, CX and VQ4. One novice station was worked on 15, WN3AMA, congrats!

In spite of difficulties I had a lot of fun operating from St. Martin and I hope to operate from there again, including the French side. The island is very nice, with fine beaches and friendly people. Accomodations are not yet up to date but a new tourist hotel is being built and will be completed this year.

On future trips to St. Martin, depending on the time of my next vacation, I shall attempt to obtain a small gas generator which will allow me to operate outside of the local heavy QRM area and which should enable me to make many more contacts.

In closing I would like to express my thanks for the help given me by the Curacao Director of Communications, the Chief of the St. Martin Radio Station, W1PST, who handled my QSL's and the many hams whose assistance and information made this trip possible. Vy 73 de PJ2MA.

Temporary QTH of PJ2MA, the police at Philipsburg, St. Martin Island. Antenna was attached to the telephone pole at left

RTTY

reported by

Byron Kretzman, W2JTP

9620 160th Ave., Howard Beach 14, N. Y.

Since beginning this column last month I've had many talks, on the air and in person, with hams who were not on radioteletype but were curious about it. The general consensus of opinion was that RTTY was either too expensive or too complicated or it took too long to build the equipment that couldn't be bought. Where did they get such ideas? Gather around chilluns, and let us really examine the situation.

Let's take a concrete example, namely W2PEE of Glen Head, N. Y. Elston received his Model 12 much sooner than he expected. This was on a Friday. Saturday, the very next day, he began construction of the W2PAT converter. The following day, Sunday, he had his first radioteletype QSO on 2-meters with W2BFD. You see? It *can* be done!

Machines are not expensive, nor are they as difficult to obtain as they were a few years ago. Last month's column listed several sources of supply. For my money, the old but rugged (and cheaper) Model 12 is still the best bet for the newcomer.

"Now, just how is radioteletype transmission accomplished?" the potential RTTYer asks. Well, for AFSK on 2-meters an audio oscillator is frequency-shifted between 2975 cycles (space) and 2125 cycles (mark) and is fed to the modulator of the transmitter. For FSK on 80, 40, or 20-meters the r-f oscillator (crystal or VFO) is shifted, usually by a diode, so that at the *carrier* frequency the space is 850 cycles lower than the mark radio frequency. It's simple. No modulator is needed. The final operates just like any other Class C final on CW.

AMATEUR RADIOTELETYPE CHANNELS

National, FSK (mark frequencies; space 850 cycles lower) 3620, 7140, 27200, 29160, 52600 kc.

National, AFSK (2125 cycles mark; 2975 cycles space) 27,200, 147,960 kc. calling & autostart 144,138 kc. repeater & duplex

California, AFSK 147,850 kc. calling & working

Washington, D. C. AFSK 147,960 kc. calling & autostart 147,495 kc. working

Chicago, AFSK (FM) 147,700 kc. calling & working

Reception isn't difficult, either. Most converters, the gadget that actually operates the printer, are designed to operate from the two standard audio tones (2975 and 2125 cycles) so on 2-meters the audio output of the receiver is just fed into the converter. For FSK reception on the lower frequencies we also feed the output of the receiver to the converter, but with this difference: the b.f.o. is adjusted to provide the 2975 and 2125 cycle beat notes required by the converter. Now, if your b. f. o. and receiver are not the most stable in the world, here is a neat trick used by many fellows: turn off the b. f. o. and feed in the output from a BC-221 frequency meter to get the desired beat notes.

Radioteletype converters are sometimes referred to as "Terminal Units." Perhaps this is because some fellows, like W2BFD, build into their converters extra features such as autostart and automatic reperforator control. These are, to me, the fascinating part of this kind of hamming. The basic converter, however, is not too complicated. Look up some of these and you will see for yourself: W2PAT Jan. '53 *QST*, W6AEE Dec. '52 *CQ*, W6UPY Nov. '53 *RTTY*, W6ZBV May '54 *RTTY*, Gates Oct. '54 *RTTY*. Again, this is only a partial list.

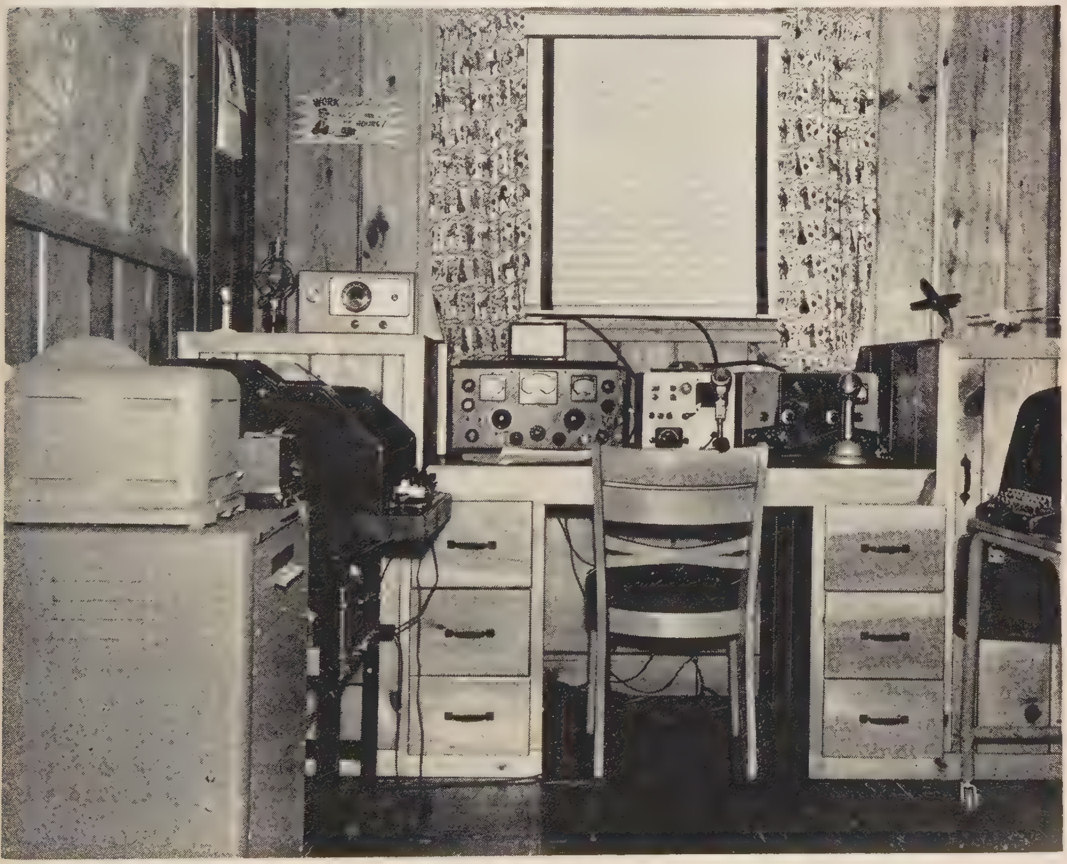
Narrow Shift

As this is being written our FSK operation is limited by FCC regulation to a shift of 850 cycles plus or minus 50 cycles. Many of us would like to try a narrower shift, such as 170 cycles. Proponents of this narrow shift are mainly Boyd "BeeP" Phelps W9BP/W0BP, Frank White W3PYW, Bob Weitbrecht W9TCJ, and Merrill Swan W6AEE. Most of the advantages of narrow shift as listed by BeeP were quoted in last month's column. W6AEE recently pointed out that a carrier shift of 170 cycles will make practical the use of autostart on 80 and 40-meters. The present 850 cycle shift ". . . leaves you wide open to QRM unless you employ complicated circuitry."

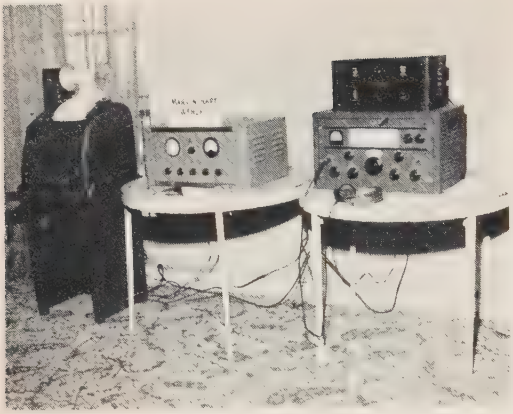
By the time this gets into print we hope that the ARRL has petitioned the FCC for use of shift "under 900 cycles" as requested at the last Board meeting. A letter dated June 30, 1955 from John Huntoon, W1LVQ, Assistant Secretary of the ARRL says, ". . . I'm glad to tell you that a petition to this effect will be filed in the next week or so, and we hope for early and favorable action on the part of the Commission."

Autostart

What's this "autostart" business? Many fellow-hams, not on radioteletype but thinking about it, ask this same question. Well, autostart to many of us is a very attractive way of hamming, particularly if we don't have an awful lot of spare time. It keeps us in touch without actually being at the keyboard. It is used only on 2-meters at this time, as far as I know. Briefly, a time clock is employed to turn on the receiver and terminal unit at preset times, usually on the hour of only certain hours. If, during the approximate one minute that the equipment is on, a steady marking tone (2125 cycles) is received, the printer motors start up and the machine is ready to copy. A *stop* signal of space (2975 cycles) of about one second will stop the printer motors but will not shut down the equipment unless one minute goes by without a marking signal of a few seconds. Does this sound complicated? In the W2BFD terminal unit it is done with RC circuits and 2½ dual triodes. W2PEE does it with selenium diodes and 3 miniature dual triodes. Details on the W2BFD autostart system may be obtained by writing to the *V.H.F. Teletype Society*, 38-06 61st Street, Woodside, New York. The descriptive bulletin is ARTT-2001 and the schematic drawing is ARTT-13. If enough of you fellows are interested, and if



RTTY setup of W2PEE in Glen Head, New York, including autostart, perforated-tape equipment and page printers. Inside the knotty pine cabinets is a 1-Kw band-switching transmitter. The beam rotator atop the SX-28A controls a 12-element 2-meter array on a 40-foot utility pole just outside the shack.



Display setup of Marvin Hart, W5HZF, at the West Gulf Division Convention, Fort Worth.

space permits, we will try to print the schematic with this column some coming month. Drop me a post-card if you would like to see us do this.

On the West Coast an entirely different system is in operation, ". . . more nearly similar to voice controlled r-f carriers," according to W6AEE. Details are lacking at the moment, but we expect by next month enough dope will be available to at least print a diagram.

Across the Nation

Operation on 80 and 40-meters is picking up. Among those who have come on recently are W7PHG, W7MQY, WØFRQ, W5TJE, W6FZC, and W2CTQ. In Wisconsin, via W9TCJ, we hear that W9LDH and W9SKF have come on, with several others almost ready to go. In the west, MARS RTTY activity is high on h.f. with W6VPC and W6MSG as Net Control and Alternate Net Control respectively. A MARS net is also active Tuesday evenings on v.h.f. in the Los Angeles area. Another new RTTYer is K6BPI at San Diego who is giving the Los Angeles fellows a DX contact. W6NWM, Yucaipa, is a nice solid 90 mile contact for the Los Angeles gang, also. (Thanks to W6AEE for the western news.)

New England area activity appears to be a bit on the low side. Al Hughes W1FGL, Jack Berman W1BGW, and John Blackburn W1WB, all in the Boston area seem to be carrying the load, all on h.f. Is no one on from New Hampshire, Maine, or Vermont? There is a good chance for someone to be a "first" in those states. Connecticut is represented by F. E. Handy W1BDI and Ken Payne W1RBF.

New York Area

To the best of our knowledge, Bob Straub W2PBG is the only ham on h-f radioteletype from within city limits. This may sound strange to many of you fellows across the nation, but listen: Bob's 80-meter dipole crosses four yards! (Most of us can go only one way with an antenna: up; and even that is limited by our nearness to the airports.) Strangely, too, Bob isn't on 2-meters where all the New York City RTTY activity is! W2PBG is pretty well equipped, though, for h-f operation. He has a Model 15 machine and a full set of tape equipment including the 12 perforator, 1A transmitter, etc. A 32V1 has been modified for FSK operation. The receiver is a 75A2 with mechanical filters. Two converters have been constructed, the W2PAT job, and most recently the W6UPY terminal unit. In the works is a kilowatt final, which will make FSK available on 80, 40, 20, 15, and 6. Other plans include the construction of an operating console and a 2-meter rig ending up with a pair of 6146 tubes.

This handsome guy is Andy Stavros, W2AKE, of Ozone Park, New York, chairman of the New York Area Chapter of the ARTS, also hard-working circulation manager of the ARTS Bulletin. Andy manages to get on 2-meter AFSK and even gets on 2-meter A-3 in spite of all the work.

A new station on 2-meters is K2JKX, Martin Bettan, in Flushing. Marty runs a Model 12 from a W2BFD terminal unit and a 2-meter converter ahead of his HQ 120-X. The transmitter is a 522 with a BC-459 as a VFO. Another newcomer is Ted Theodoseau, W2QQG, in Jamaica.

Elston Swanson, W2PEE in Glen Head, is set up for full tape operation. Soon he will be connected up for automatic reperforation. Machines include the old stand-by Model 12, a new 100A, and a 400A midget printer. W2PEE covers some amazing ground with his Gonset Communicator. Of course, his 200-foot hill and his beam helps a bit, too. The 200-feet I could use, but Idlewild airport would surely object. (I'm right in line with runway 13R.)

The NY-ARTS is preparing a directory of autostart clock times of the New York area stations. This will be a great help in the passing of traffic. Many a message has been lost because of a mistake in knowing the other fellow's clock time.

W2PRB/2 reports some amazing coverage from a Manhattan skyscraper. Wonder how many of you fellows remember the 5-meter station of Arthur Lynch, W2DKJ, 71 stories up, at 40 Wall Street? This was back around 1936. Getting back to 1955, Mac has a surplus l-f FSK exciter which he is modifying for use on 80 and 40.

FAX

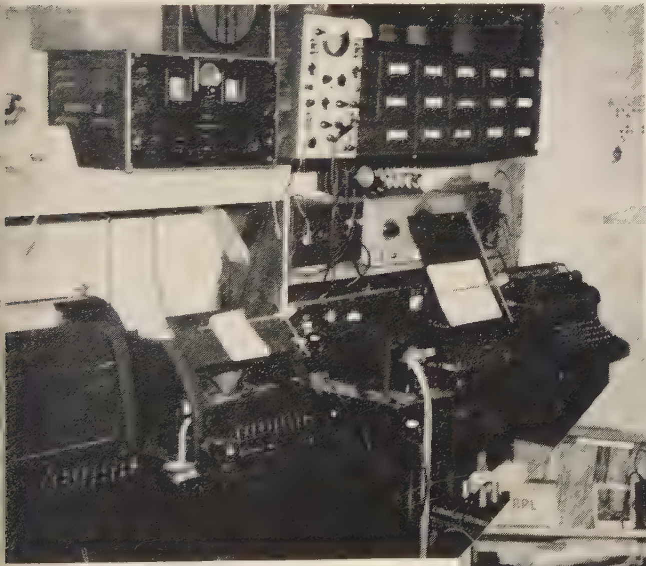
John Williams W2BFD and Andy Stavros W2AKE have been experimenting with facsimile on 2-meters. They began with the 2975 cycle tone and shifted it lower in a linear manner. Satisfactory operation was obtained with 850 cycle shift. Shift up to 1200 cycles was tried with no great advantage apparent. Times facsimile machines were used at each end of the circuit.

Facsimile operation on h.f. is being planned across the nation, too. According to W6AEE, Ed Clammer W2BDI, Amos Burkett W5JBW, and Marvin Hart W5HZF will soon be on. Let's hear from you fellows pioneering in this new phase of hamming.

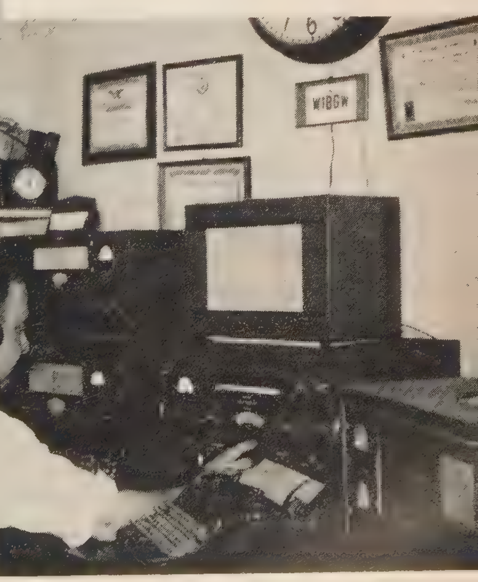
Comments

In closing, I would like to comment on a very interesting letter from Claude Sweger, WØBTV, of Yuma, Colorado, a non-radioteletyper. Mr. Sweger would like to know which is better, CW or RTTY. That, Mr. Sweger, to borrow a line from a former Broadway play, *I Remember Mama,* is best answered, "Like being ten-feet tall—good for some things, bad for others." Mr. Sweger also quotes an eminent Morse authority, ". . . . all dependable commercial communications via radio are handled . . . with ink recorders for reception . . . ." This required a little checking, so I contacted two of the best known commercial communication companies.

[*Continued on page 88*]



Jack Berman, W1BGW, operates this impressive layout: Model 26, Model 14 typing reperforator assembled from parts, and a WU tape puncher. Upper left is a Creed tape transmitter which requires no commutator. Converters under the table are of the W2PAT design.



Operating position at W1BGW. Jack has earned the BPL Certificate on radioteletype and DXCC on CW.

ALL TIMES IN EST

EASTERN USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Northern & Central Europe	1130-1630 (2-3)	0700-1400 (2-3) 1400-1600 (3-4) 1600-1830 (1-2)	1700-2130 (3-4) 2130-0400 (2)	1800-0130 (2-3)
Southern Europe & North Africa	1100-1630 (3)	0700-1300 (2-3) 1300-1630 (3-4) 1630-1900 (1-2)	1730-2100 (3-4) 2100-0200 (2-3)	1800-0100 (2-3)
Near & Middle East	1100-1400 (1-2)	0630-1230 (1) 1230-1400 (2-3) 1400-1630 (1-2)	1800-2100 (2-3) 2100-2300 (1-2)	2000-2300 (1-2)
Central & South Africa	1200-1600 (2-3)	0630-1300 (1) 1300-1530 (1-2) 1530-1900 (2-3)	1800-0000 (2-3)	1930-2300 (1-2)
South America	1200-1730 (1-2)* 0900-1600 (2-3) 1600-1800 (3-4) 1800-1900 (1-2)	0630-1600 (2-3) 1600-1900 (3-4) 1900-0100 (2)	1800-0500 (3) 0500-0730 (2)	1900-0430 (2)
South East Asia	NIL	0700-1000 (1) 1630-1830 (0-1)	0300-0700 (0-1)	NIL
Australasia	1700-2000 (1)	0700-1000 (2) 1500-2000 (1) 2000-2200 (1-2)	2330-0600 (2-3) 0600-0800 (3)	0100-0700 (2-3)
Guam & Pacific	1600-1800 (0-1)	0700-1000 (1-2) 1500-1930 (0-1) 1930-2100 (1-2)	2200-0730 (3)	2300-0700 (2-3)
Japan & Far East	NIL	0630-0830 (1-2) 1600-2000 (1)	0200-0700 (1)	0300-0600 (0-1)
Greenland	1100-1700 (1)	0630-1300 (2) 1300-1700 (3) 1700-1900 (1)	1730-2000 (2) 2000-0530 (2-3) 0530-0930 (2)	0100-0600 (2)

ALL TIMES IN CST

CENTRAL USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Western & Central Europe	1200-1530 (1-2)	0700-1400 (2) 1400-1530 (3-4) 1530-1730 (1-2)	1700-2000 (3) 2000-0300 (1-2)	1830-0100 (2)
Southern Europe & North Africa	1300-1600 (2-3)	0630-1400 (2) 1400-1600 (3-4) 1600-1800 (1-2)	1700-0130 (3)	1830-0030 (2-3)
Central & South Africa	1000-1530 (2-3)	0600-1300 (1) 1300-1530 (2) 1530-1800 (2-3)	1730-0000 (2-3)	1830-2300 (1-2)
Central America & Northern So. America	1200-1600 (1-2)* 1000-1600 (3-4) 1600-1830 (1-2)	0600-1500 (3) 1500-1930 (4) 1930-0100 (2)	1700-0500 (4-5) 0500-0730 (2-3)	1800-0500 (2-3)
South America	1200-1600 (2)* 0930-1500 (2) 1500-1700 (3) 1700-1800 (1)	0600-1600 (2) 1600-1900 (3-4) 1900-0000 (2)	1800-0600 (3-4)	1900-0430 (2-3)
Japan & Far East	NIL	0700-0930 (1-2) 1400-1700 (1) 1700-2000 (2)	0100-0800 (1-2)	0200-0700 (1)
South East Asia	1500-1700 (0-1)	0730-1000 (1-2)	0300-0730 (1)	0330-0600 (0-1)

ALL TIMES IN CST

CENTRAL USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Hawaii	1330-1930 (2)	1000-1900 (2-3) 1900-2100 (3-4) 2100-2230 (1-2)	2130-0200 (4) 0200-0800 (2-3)	2300-0700 (3)
Australasia	1530-2000 (1-2)	0630-1000 (1-2) 1300-1900 (1) 1900-2130 (2)	0000-0800 (3)	0100-0700 (2-3)

ALL TIMES IN PST

WESTERN USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Europe & North Africa	1030-1200 (0-1)	0700-1430 (1-2)	1800-0100 (1)	1900-0000 (0-1)
Central & South Africa	1200-1400 (1) 1400-1600 (2)	0630-1330 (1) 1330-1800 (2)	1700-2200 (2-3) 2200-0000 (1)	1800-2200 (1-2)
South America	1200-1600 (1-2)* 0900-1300 (2-3) 1300-1700 (3-4) 1700-1800 (1-2)	0600-0800 (3) 0800-1500 (2) 1500-1830 (3-4) 1830-0000 (1-2)	1700-0400 (3-4)	1800-0300 (2-3)
Guam & Mariana Islands	1400-1930 (2-3)	0700-0900 (1) 1130-1900 (2) 1900-2200 (3) 2200-2330 (1)	0030-0830 (3-4)	0200-0730 (2-3)
Australasia	1400-1900 (1)* 1100-1800 (1-2) 1800-2000 (3)	0630-0900 (1) 0930-1100 (2) 1100-1800 (1) 1800-2230 (3)	2200-0730 (3)	2300-0630 (3)
Japan, Okinawa & Far East	1400-2200 (2)	0730-1100 (1-2) 1100-1800 (2-3) 1800-2130 (3-4) 2130-0030 (1-2)	2300-0730 (3-4)	0000-0600 (2-3)
Philippine Islands & East Indies	1400-1900 (0-1) 1900-2100 (1)	0800-1100 (2) 1100-1900 (0-1) 1900-2300 (1-2)	0130-0630 (1-2)	0300-0500 (1)
Malaya & South East Asia	1600-2000 (1)	0730-1000 (1) 1000-2000 (0-1) 2000-2300 (1)	0400-0700 (1)	0500-0630 (0-1)
Hong Kong, Macao & Formosa	1500-2100 (1)	0800-0930 (1) 1400-1900 (1-2) 1900-2300 (2-3)	0100-0600 (2-3)	0200-0500 (1-2)

Symbols For Number Of Days Path Forecast To Open:
(0) None (1) 10% (2) 25% (3) 50% (4) 70% (5) 85% or more.

* Indicates time of possible ten-meter openings.

The CQ Propagation Charts are based upon a CW radiated power of 150 watts and are centered on Washington, D. C., St. Louis, Mo., and Sacramento, California. These forecasts are calculated from basic ionospheric data published by the National Bureau of Standards and are valid through October 15th, 1955.

PROPAGATION

Forecasts by
George Jacobs, W2PAJ/W3ASK
607 Beacon Road, Silver Spring, Md.

Propagation Conditions, September:

September is a month of changing shortwave propagation conditions. During the early part of the month conditions tend to remain the same as during the summer months but towards the end of the month typical winter propagation begins. Winter propagation conditions are characterized by higher usable frequencies during the daylight hours, with improved DX on 15 and 10 meters and lower usable frequencies during the evening hours. Static levels decrease considerably during the winter months and ionospheric absorption tends to decrease resulting in stronger signal intensities. Sporadic-E type short-skip propagation decreases considerably during the winter months, but aurora activity tends to increase. On September 23rd the autumn equinox occurs. This is the day when the sun crosses the equator as it travels towards *southern* skies for the winter months. On this day, day and night throughout the world are of equal length. On long radio paths extending from the northern to the southern hemispheres (for example from the United States to Australia) there is somewhat of a propagation balancing effect during the equinoctial period which exists for about a month on each side of the day that the equinox occurs. On these circuits, *overall* ionospheric absorption is usually at its lowest value of the year and average static levels are generally also at their lowest values. This usually results in a marked improvement on all the shortwave amateur bands for these circuits during this period.

> **"Ionospheric disturbances, or unstable radio propagation conditions are forecast for September 1-3, 22-24, and 28-30. A period of exceptionally good shortwave propagation conditions is forecast for September 8-12."**

6 Meters: Not many short-skip openings expected. Band may open occasionally during periods of sporadic-E type propagation or during aurora type openings.

10 Meters: Somewhat more daytime DX on long north-south paths than during the previous year, but DX still generally poor on this band. Short-skip openings are expected to decrease considerably.

15 Meters: A considerable improvement in propagation conditions is expected during September and the winter months. Daytime DX should be possible to almost all areas of the world. Signal intensities are expected to be strong, even with low power transmitters. This may turn out to be the best daytime DX band during the winter months.

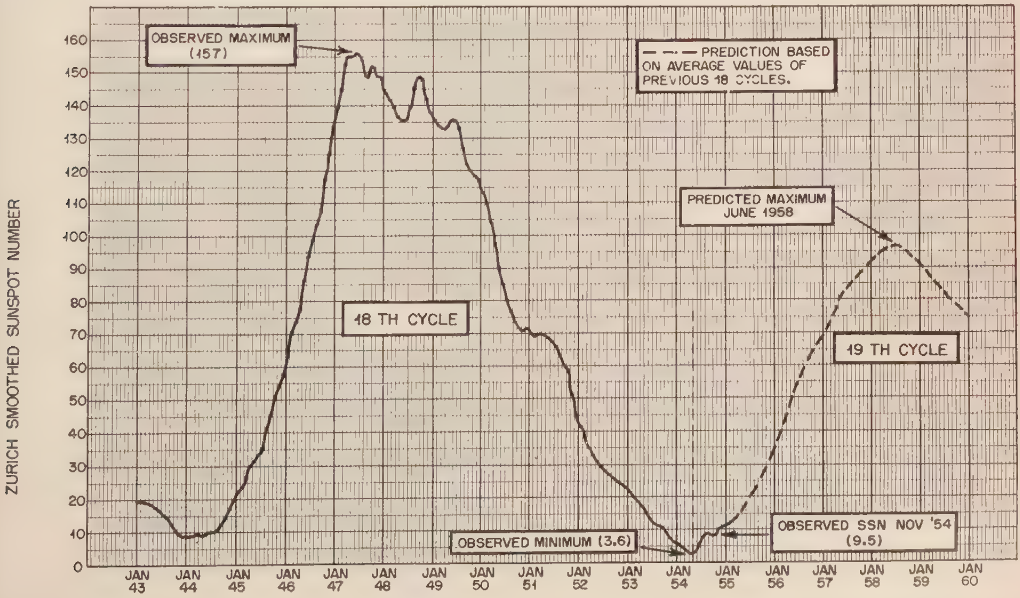
20 Meters: Band closing a bit earlier than during the summer months, but world-wide DX conditions fair to good from shortly after dawn to somewhat after sundown, local standard time. Considerable F layer short-skip possible during the daytime hours.

40 Meters: DX fair and improving with stronger signals and less noise from the early evening hours to shortly after dawn. Regular layer short-skip possible almost around the clock.

80 Meters: Night-time DX fair and improving as static levels decrease. Short-skip openings from regular layer propagation possible around the clock.

160 Meters: Static and ionospheric absorption decreasing and night-time DX should be possible on some nights. During late September and early October conditions improve on this band for circuits to Australia, South Africa, etc. Regular layer short-skip openings during the hours of darkness.

[*Continued on page 105*]



Prize winning photograph of W8DQR's antenna, taken and sent in by W8JLQ.

VE3DIR's new beam being pulled into place by W2ALR.

VHF

Reported by Sam Harris, W1FZJ

P.O. Box 2502, Medfield, Mass.

Well, Field Day done come and gone and now it's column-writing time. Speaking of Field Day, the W.A.R.A. had a nice set-up on Prospect Hill in Waltham, Massachusetts. Rigs were in operation on seventy-five meters (SSB), eighty-meters (CW) forty-meters (CW), ten meters (phone), six-meters (phone), and two-meters (phone). I was amazed to note that the two-meter set-up running twenty watts to a twelve element beam outscored any of the other positions. Considering that field day is essentially a low frequency operation, their one hundred and three contacts on two meters and fifty-two contacts on six meters speaks well for the VHF activity in the New England area.

Of course I hasten to point out that if Ray Bilger (W3TDF) hadn't helped out the low frequency boys, the VHF section of the North Penn Amateur Radio Club might have come out ahead. As it was their VHF section knocked off eighty-two contacts as compared with ninety-six on eighty CW and one hundred on forty CW. Ray, in addition to holding skeds with W1REZ of Milford, Connecticut, and W8SRW of Hubbard, Ohio, has managed to boost his six-meter score to twenty-one states.

Two-Twenty

Rumor has reached us that the residents of Kennesaw, Georgia are now being entertained by a new two-twenty Mc station. George Hann (W4EUK) is getting about one hundred watts out of a 4X150-A down there and with the help of a good sixteen element beam is spraying signals in all directions. George even threatens to renew his subscription if we show a genuine interest in two-twenty Mc. Particularly if we can talk someone into giving him a few skeds. Anyone interested in Georgia? (Confidentially, George, I know a lot of fellows who would *give you* a subscription for a contact with Georgia.)

NBFM

Information from impartial observers in Ohio, Georgia, Texas, and Illinois calls our attention to the appalling lack of interest in NBFM as a method of inserting intelligent communication on an otherwise clean carrier. Dink (W8IJG) claims to be getting fifty percent more readability on his two-twenty Mc skeds with W3SUK when Jim uses NBFM. Reports from Burgettstown, Pennsylvania, on how you generate this kind of NBFM are hoped for in the near future.

Judging from the number of fellows who haven't worked this state I suppose I will have to give some credence to the following excerpt from a letter just received: "I'm sitting here listening to seventy-five meters. My transmitter covers two meters but no one to talk to."—Signed, Paul Marska, K4AVU/4 Columbia, *South Carolina.*

[*Continued next page*]

S.S.W. CONTEST

Q. and A.

Q. How late can I send in my log?
A. Logs which reach me by the third of the month can be published in that month's issue. Results reaching me later than the third cannot be published until the following month. While it has no bearing on the issuing of winners' certificates, it would be very desirable to get the logs in as soon as possible in order to keep the standings up to date.

Q. Must the month's activity be reported on an official log sheet?
A. No. Any reasonable (decipherable) report form may be used.

Q. Do contacts made while operating mobile or portable count?
A. Any contacts made while operating mobile or portable within the confines of your home State are eligible.

Contacts made while portable or mobile in any other State are eligible for the award in that State.

Pictures

A pair of 6J4's to the gentleman in Toledo, Ohio for the photograph of W8DQR's antenna. Howard (W8JLQ) caught the judges fancy with his snapshot of Paul's new thirty-two element array. More details on the antenna in the correspondence section.

Directory

By telephone, air mail, magazine and radio we are informed of a move being started in California to publish a VHF directory. Jeff Jefferies (W6SBZ, ex-W5WIY) has asked for the following information from the VHF boys.

1. Stations active in the area.
2. Polarization prevalent in area.
3. Net activity—frequency, day and time.
4. Any additional details of interest to VHF fraternity.

The information thus obtained will be compiled and published as a VHF directory. It is suggested that the information be gathered by local radio clubs and forwarded to Jeff at 44043 N. Fern Avenue, Lancaster, California. Personally I think such a book would be very handy to have around. (Particularly if it contained a few phone numbers.)

Foreign News

The May issue of *O.E.M.* (a publication of the *Austrian Amateur Radio Association*) makes mention of the first 420 Mc contact between Austria and Western Germany. The Austrian end of this contact was handled by OE2JG. Information on the equipment in use and further details on the contact are promised in next month's issue of *O.E.M.* If you are interested, we will be glad to pass it along. I don't think, however, that O. M. Goeschelberger (OE2JG) is ready to make schedules with us on 420 Mc yet.

O.E.M. also claimed a new DX record on 1215 Mc. On September 5, 1954, 1050 CET, OK1KAX made a contact with OK1KRC over a distance of one hundred and twenty-five miles. The contact was made between Mt. Schwarzerberg (elevation 1265 meters) and Mt. Klinovec (elevation 1244 meters). Equipment in use consisted of lighthouse tube tranceivers mounted on the antennae.

Mario (I1ER) says there is a good possibility that sixty Mc operation will be authorized in Italy in the near future. Present VHF activity is confined to 144 Mcs and up. Mario is presently experimenting with 1300 Mc using a doorknob oscillator and a corner reflector. He would like information from any W hams on the relative merits of vertical versus horizontal polarization. (*Ye Gods!*)

Receivers

Our Field Day stint gave me an opportunity to use Harold (W1LUW) Jensen's two-meter converter. After using it for about four hours, I was amazed to find that it wasn't a crysta controlled converter. Local oscillator injectic is obtained from a fixed-tuned, self-excited o cillator on 136 Mc. The stability of this oscill tor is sufficient to give perfect results on CV signals even when the i-f receiver is used in th crystal position. As a firm proponent of crysta controlled converters, I was speechless. An comments?

Speaking of receivers, I received a letter fror Hank Wolf (W6HAO, ex-W8ZED). Hank, a ways active on the 2½-meter and 2-meter band in Ohio is now getting the benefit of the Califor nia sunshine at the Olive View Sanatorium Olive View, California. Box 119. They locke up the diathermy machines when he moved int the sanatorium so he's not on the air. I'm sur he'd like to hear from any of his old friend from the Cleveland area.

Had quite a discussion with Gordo (W1OUN) anent receivers, transmitters, an tennae and the trials and tribulations of moun tain-top contest operating. It seems that Gor don (heard most often as the second operato at W1OOP) got half way through the last VHF contest when the storm hit. Among other thing his water-soaked generator gave up the ghos and he had to give up. Despite this, the score he piled up will probably take first place in the Maine section.

Mountain-Top Operation

Listening on the VHF bands, I notice a cer tain amount of discomfiture (*colloquialism;* no to be confused with A.G.'s "Routing of the enemy" definition) among the local ham resi dents of the mountain top locations. It seems that if you live in a normal location in New Hampshire (for instance) an expedition on top of a mountain in your back yard can be pretty tough competition. It might be practical to de clare all mountain top portable locations as multiple operator stations. Or you might try the SSW contest. It would take a pretty rugged mountain crew to cop first place in that.

Correspondence

From **Toledo, Ohio,** Howard (W8JLQ) says: "Enclosed is a shot of W8DQR's two-meter array. Isn't it a dandy? As much horsepower per element as I've seen in a long time. It is in the clear and sixty feet high at the *bottom.* He feels that the performance comes from the feed and the vertical stacking of four lazy H's with reflectors compared to the more usual arrangement of two sixteen element arrays side by side. Another effective station in the Toledo area is W8MGB. Ty has a twenty element array consisting of four bays made up of five element beams."
(What, no picture?)

Zanesville, Ohio: Bill, W8JWV, reports a total of nineteen states using a thirty-two element beam and a hundred watts. A pair of 4-125-A's are nearing completion. *(How about a sked, Bill?)*

High Point in Summit County: Dink (W8IJG) reports good results on his 220 Mc skeds with W3SUK. One hundred percent contacts both ways. Almost as good to W8SVI, Dayton, and W8LPD, Cincinnati. *(A complete list of Dink's 220 Mc skeds is in the sked section.)* Six-meter activity is going fine. Twenty-six states so far and still going strong.

Dayton, Ohio: Ev Taylor, W8NAF says:

> "Most of the Dayton gang have been rebuilding or sleeping as activity has fallen off since the last contest. W8SVI is building a "big-fat" final for 220—won't tell how many KW it will run. W8HOH is moving to Vandalia and will be out of that three hundred foot hole that he moans about. WN8AXA (XYL of W8QFA) is one of the most active YLs in the Buckeye state now on 144. W8FPZ is the most mobile man in these parts on 144. I have six states with a Communicator plus a three element about twenty-five feet high. Am also building a new converter using a pair of 6J4s in cascode into a 6AK5 plus a 12AT7—it's ninety percent complete.
>
> The main reason for this letter is a suggestion to the gang on 144—Let's establish some National calling frequencies—may I suggest 144.990 (8055 kc crystals) for the general licensee and 145.00 (8060 kc crystals) for the novice. These frequencies are not too far apart that a guy would have trouble losing fingernails in switching from one frequency to the other. The novice frequency is high enough above 145 that the novice will not get in trouble in case the rock is off in a low frequency direction. Having a National calling frequency(s) will knock off a lot of QRM in various local areas—there are a lot of guys looking for DX and there is nothing more provoking than to hear four or five guys in a round table, all operating on different frequencies between 144 and 144.5—shooting the cows husband. Hope some crystal manufacturer will get smart on this suggestion and put out some 8055 and 8060 rocks."

(How about it fellows. Let's hear your comments.)

Dayton, Ohio: Whitey (W8HOH) sez:

> "Have my 417-A, 417-A xtal converter working fine (*No picture?*) Will have my sixty-four element beam on 144 Mc by fall if they finish my QTH by then. W8SVI has 300 watts on 220 Mc now. (*The secret's out.*)

Marvin, South Dakota: Bernard (W0RSP) is operating ninety percent 144 Mc, using an 829B following a 522. Sixteen-element beam thirty-five feet high, located five hundred feet above surrounding territory. Receiver is a four-tube converter into a Super Pro. So far Barney has ten states confirmed. *(How'd you like to work Massachusetts, Barney? I'm ready.)*

Fort Worth, Texas: Lavern (W5BMR) lists the following horizontally polarized stations active in his area. W5JQU, W5CVW, W5RHL, all running high power and using big beams. *(How big is "big" in Texas, Lavern?)* W5AXO, W5BMR, W5CVA, W5WRV, KN5AKS, and WN5FTH are all vertically polarized and running under twenty-five watts. Most of the fellows here experience TVI on channel four. No trouble on channel five or eight.

(TVI on two meters can be licked, Lavern, and we have several articles on the way to help you.)

Sherman, Texas: George Erickson (W5POG) writes:

> "I believe we need something in the way of awards to stimulate activity on the VHF bands. —One thing I would like to see is a certificate for confirmation of a hundred different stations worked on one VHF band. Am presently running ninety watts to a *millen 90810.* Antenna is

A well known operator on the two-meter band. Hank (W2UTH) Victor, N.Y. is using an 829B final, running 135 watts input. Antenna is a twelve element beam.

a five over five.—The following stations are worked regularly from my QTH. W5HXK, Watonga, Oklahoma, W5SCK, Ardmore, Oklahoma, W5IOW, Ada, Oklahoma, W5ATW, Waco, W5BOT, Austin, W5AJG, HHU, ABN, TYS, UND, Dallas, W5AQS, Palmer, W5MWW, New Boston, W5SWV, Denison, W5ML, Oil City and W5RCI, Marks, Miss. (occasionally).

That's a nice list, George. Let me know when you're ready to work Massachusetts.

Livingston, Texas: Bob Kurth (W5IRP) writes:

Sure glad to see that *CQ* now has a VHF column again. VHF is my main interest in radio. In this area we have the *144-and-up Club* organized that has helped in creating some activity on the bands. It is composed of South Texas two-meter operators mostly.

The rig here is an 829B running around seventy to eighty watts, a thirty-two element horizontal beam and a Techcraft converter ahead of an *HRO*.

I have been able to keep daily skeds with W5IHS of Eagle Lake, Texas at high noon distance of one hundred and twenty-five mi and with W5IVU at Edna, a hundred and si miles, so we can work these distances rat consistently.

If you can find some articles on Linear Cl B amplifiers for two meters, I certainly wo like to see them in print.

Sure glad to get the news from down that w Bob, and would like to hear more about t VHF club.

Habitues of the two-twenty Mc band in Yo Pennsylvania should be warned of a situati which has developed in their territory. The w I get the story—Bill Barefoot (W3UQJ) h built a crystal controlled converter for tw twenty Mc which not only works good but easy to build. Having built it he can't figure o how to pass the information along. This da gerous situation should not be allowed to ex without an effort being made to remedy *(Read last month's editorial, Bill, and act a cordingly. It sounds like you might have som thing worthwhile.)*

A gentleman of long aquaintance in Va paraiso, Indiana wants to know why we do have more information on noise generator tec niques. Wig (D. E. Wiggins, W9CWG, e W8YEG) is not the only one asking for do on n-f measurements. It seems there is a la of noise in Kennesaw, Georgia also. About tw more reports from people who can't find an noise and we'll have to get ol' Smoke to d something about it.

Sure glad to hear from you Wig, and hpe w u sn.

From **Mentamora, Illinois:** Hod (W9ALU says he would like to see a couple of *CQ*-spo sored contests. A spring and fall contest po sibly held on national holiday weekends is h suggestion.

Ol' Smoke's been working on this Hod an we're glad to hear someone is interested. Any one else got any ideas along this line?

The log department received a nice lette from Russ (W0BCB) of **Waterloo, Iowa.** Amon other things Russ reports a good two-mete band opening from Iowa to South Dakota, Minnesota and Illinois on July 8th. Contacts wer made with W0IFS, Minneapolis, W0RSP Marion, South Dakota, W0OQA, Waterloo Iowa and W9AAG, Woodhull, Illinois.

Meanwhile reports from Bill (W9DSP) a **Chippewa Falls, Wisconsin** indicate that th band was pretty hot going the other way. Contacts were made to North and South Dakota Iowa, Minnesota, Illinois and Wisconsin. Bil is running five hundred watts to a pair o VT127A's. Antenna is a twenty-four elemen colinear array and receiver uses 6AJ4's in the front end.

Received a barrage of mail from Tony (VE3DIR-**Toronto, Canada).** First letter told about schedules with New England stations Second letter spoke about people with tin ears who couldn't hear a KW in their back yard.

Raytheon Transistor Handbook

Any ham with a drop of experimental blood coursing his veins will have to own this handbook of transistor circuits. The book is put out by Raytheon and has circuits for over 50 different transistor devices, all using CK722 Raytheon transistors.

RAYTHEON
TRANSISTOR APPLICATIONS
More than 50 Practical Circuits
using
RAYTHEON CK722 TRANSISTORS.
Complete How-To-Do It Instructions.
PRICE 50¢

The bulk of the circuits in this book are relatively simple and can be built up in a few hours at most. Certainly if you are interested in knowing about transistors you will find so many circuits here that you'll want to build that you will be busy for some time to come. Of particular interest in the book are several receivers, audio amplifiers, preamps, clippers, oscillators, test meters, metal locators, geiger counters, etc.

Third missive was a QSL card confirming our contact on 144 Mc. I first heard Tony here in the Rhododendron swamp on the 18th of July. Signals were there but not readable. The next day was spent with a noise generator finding out why. On the 19th of July Tony was readable 5-5-9. His signals have been readable here every night since. One of the reasons for this can be seen in the photograph of Tony's beam being put into place by W2ALR. Another reason is the six hundred watts he's running to a pair of 4-125A's.

It sure is good, Tony, to hear that four hundred and thirty mile signal come in night after night. Keep up the good work and let's hope your working hours stay as is for a while.

Incidentally, since I first heard Tony he has knocked off Massachusetts, Connecticut, New Hampshire and at this very moment is frantically calling W1DEO in Cape Elizabeth, Maine. I just checked and heard W1DEO answer him so maybe he's got Maine too. As I tuned down the band to find W1DEO I heard Andy (W1AJR, Middletown, Rhode Island) calling VE3DIR.

(And the editor wants to know why this column is always late.)

San Francisco, California: Bob Steele (K6GQJ) wants to know (along with a half dozen other people) why we don't have more information and articles on six-meter activity. If the six-meter boys don't send in the news we can't print it. Articles on six-meter gear are best written by the boys who design, build and use the equipment. No worthwhile article on six meter gear will ever be turned away from our door. How about it, six-meter men?

Just to prove that somebody is on VHF in **Florida,** we quote from a letter sent by Bill Massey (W4ECL) anent a new antenna he is using:

> "I have used a two meter antenna here lately that may be of interest to other amateurs. It is a horizontally polarized antenna with almost 360 degree coverage. It also seems to have some gain over a plain dipole. It consists of a conductor two wavelengths long, bent into a circle and fed with 300-ohm twinlead. Apparently, the phase relationship between the currents on opposite sides of the circle results in an antenna with good low-angle radiation and a cloverleaf radiation pattern. I wonder if this antenna has been used before and, if so, where I could get information on them."

Old Smoke won't commit himself on this antenna so I pass it along for your comments.

Schedules

VE3DIR	Toronto, Canada 144.2 Mc. to W1KCS, Rhode Island. Tony calls the last two and a half minutes of each five-minute period. Sked begins at 2200 EDT, ends at 2215 if no contact is made.
W8IJG	West Richfield, Ohio 220.1 Mc to W8QLO and W8IPR Detroit, Michigan. 2000 EDT to 2015 EDT.
W8IJG	West Richfield, Ohio 220.1 Mc to W3SUK Burgettstown, Pennsylvania. 2130 to 2145 EDT.
W8IJG	West Richfield, Ohio 220.1 Mc to W8SVI Fairborn, Ohio. 2150 to 2205 EDT.
W3SUK	Burgettstown, Pennsylvania 220.2 Mc to W8SVI, Fairborn, Ohio. 2205 to 2215 EDT.
W1REZ	Milford, Connecticut 144.04 Mc to W3TDF Langhorn, Pennsylvania, 144.02 Mc 2030 EDT.
W3TDF	Langhorn, Pennsylvania 144.02 Mc to W8SRW, Hubbard, Ohio, 144.02 Mc 2200 EDT.
W1FZJ	Medfield, Massachusetts 144.3 Mc to K2APS Vernon, New York. 2130 EDT.
W1FZJ	Medfield, Mass., 144.3 Mc general call in direction of Pittsburgh, Pennsylvania. 2300 EDT.
W1FZJ	Medfield, Mass., 144.3 Mc general call in direction of Cleveland, Detroit, Chicago and all points west. 2330 EDT.

All above skeds are daily. Please include full information on your schedules such as time, frequency, who or what called and direction.

Tony, VE3DIR in one of his letters had the following suggestion to make:

> "A point you might plug in the column is the fact that some people do work odd shifts, and due to no one being on during the day a lot of good openings are missed. Possibly you could run a "Skeds Wanted" paragraph, with frequencies listed, or get people to let you know if they are off duty during the day, and if so, do they get on the air, and at what time and on what frequency."

Visits: *Past*

If a visitor is the one who visits and a visitee is the one who is visited then mark me down as a first class visitee. In addition to Gordon (W1OUN), we also had Hank (W1OOP), Paul (W1PYM), Southard (W1DDN), Rus (W1QCC), Ray (W1REZ), and Ye Olde Rex (W1WGM) in person. To say nothing of our old standbys like Freddy (HB9MS), Lloyd (W1DWO), and XYL Alice (W1TUD).

Ye olde Rex (a local purveyor of amateur equipment) gave me my first taste of the much heralded Yankee salesmanship (horse trading to you). I have always maintained that if you are using expensive tubes in your preselector (416A or 417A etc.) and if the transmitter is dumping five hundred watts or more of R.F. into the feedline, the only practical way to switch the antenna feedline from the receiver to the transmitter is by using a Bird Coaxwitch. The objections to such a

[*Continued on page 114*]

DX

Gathered and reported by

R. C. "DICK" SPENCELEY, KV4AA

Box 403, St. Thomas, Virgin Islands.

YASME-CQ-EXPEDITION, VP2VB/P: As we write (July 17th.) most of the radio gear has been received and will shortly be installed on the YASME. As this appears in print, barring unforseen delays, the YASME should be westward bound on the Pacific. To bring our readers up to date the YASME is a forty foot, 21 ton, "Bermudian" sloop manned by RAF veteran Danny Weil who performs all chores aboard, from Captain to Cabin Boy. Purchasing the hulk of the YASME in 1949 Danny proceeded to rebuild the entire craft and embarked in pursuit of his dream, to be the first Englishman to sail around the world alone. Leaving England in August '54, the YASME has made stops at Vigo, Lisbon, Gibraltar, The Canary Islands and Gambia. Leaving Gambia on November 20th the YASME made what might be a record Atlantic crossing for boats of this type, covering the 3220 miles to Antigua, B.W.I. in just 22 days. Heavy seas and near-gale force winds were his constant companions on this trip. Since leaving England the unofficial call sign of "G7DW/MM" was used on 14032 kc. Over 300 contacts resulted with a small 30 watt rig and BC-348 receiver furnished by G8DL. Arriving in St. Thomas on April 3rd the idea of turning his voyage into a two year long DX expedition was suggested and received with enthusiasm. To this end Danny visited Tortola, British Virgin Islands, and acquired the legal call of VP2VB. Ham gear now aboard the YASME now consists of two ELMAC AF-67, 65 watt, all-band phone and CW transmitters. Reception will be handled by an ELMAC PMR-6A and HQ-129-X. Provisions are made so th the transmitters and PMR-6A may also be o erated from his 24 volt battery supply v dynamotors. Thanks to International Westin house, via W3RIS and Mr. George Wilcox, tw gas generating plants are expected shortly. (of the ELMAC rigs was heard recently HHØA during the W6OXS/W6VUP trip wh the other was donated by ELMAC's Mu Products Co. W9FKC, W5AVF, W8ZY a K2EDL are also to be thanked for their he A forty foot, semi-vertical antenna, will be us on the boat and other combinations tried. It obvious that a trip of this type is accompanie by many hazards but, with a bit of luck, thing should go well. Danny is not the best CW o erator in the world but he has the "makings and practice is one thing I am sure he will hav a lot of!

Tentative plans, always governed by pre vailing winds, tides and other factors, call fo stops at the following places: British Phoeni Islands, Nauru Island, Solomon Islands, Po tuguese Timor, Andaman and Nicobar Island Laccadive Islands, Maldive Islands, Seychelle Islands, Aldabra Island, Comoro Islands, S Helena and Ascension Islands. Radio gear wi be taken and operated ashore at these areas Aid from G2MI and G2RO has resulted in letter from the British Colonial Telecomm which should ease Danny's way towards acquir ing ham licenses at all British Colonial Posses sions. The YASME is in no hurry and Dann plans to stop at any particular spot for th length of time necessary to exhaust its QSO pos sibiliies. He will also pursue his trade as exper watchmaker at these stops and get them back or time! QSL's go via KV4AA.

Funds are necessary to keep this trip on a going basis and it is requested that small contri butions be forwarded to KV4AA or CQ by a many hams as possible. Cooperation in thi matter will avoid the necessity of the "buck

We welcome the following newcomers to the HONOR ROLL:

JA1CR 37-127
EA4BH 35-137

per-QSL" basis which, we think, is generally frowned upon.

SAN MARINO, I1DCO/M1: Gino, I1DCO, was active from this spot on July 9th and 10th. He contacted a substantial number of W stations. QSLs go to Box 20, Ferrara, Italy.

Errata

VK4YP overheard ZY9AA in contact with a YU station. ZY9AA gave his name as "Spiv", QTH Phoney Island and QSL via Santa Claus. The excited YU replied that he would QSL immediately - - - - - - and by airmail!

BRITISH GUIANA, VP3VN: For those needing this country, Vasco, VP3VN, advises that he will be on every Sunday morning from 1200 to 1400 GMT with a 14080 crystal.

DX Jottings

Via W1MCW we hear that YI3WW is on from 1700 to 220 GMT looking for W's on 14260. Both Y13WW and YI2AM transmit around 14110-140. . . . JA6AD nabbed CR10AN who gave his name as "Dick" and QTH: Box 24, Dili. . . . AC3SQ appeared briefly as AC5SQ in Bhutan but is now back in AC3. . . . We understand that FW8AB has transformer trouble which keeps him off the air. W6MUR advises that an xfmr will be sent him via air to nearest point and thence via boat. . . . ZA1KAD has been on claiming to be a club station in Albania. W2GT copied him as saying: QSL via I1GZ. . . . Via W5ALA and the West Gulf Bulletin PX1YR advises that his new beam should now be in operation and that he is QRV almost every evening from 1900 to 2300 GMT 14,100/120, A3. Yves speaks English. . . . UC2AA told G6ZO that the Russian hams would soon be free to QSO anyone! . . . DL1CU and DL1BZ have applied for a San Marino license for operation there this fall. . . . VQ5FS is EI9G and will be in Uganda for about three years. . . . Bob Ford, ex-AC4RF, recently released by China is visiting his parents in England. QSL's would probably reach him via R.S.G.B. . . . Carl, SM5ARP, reports that he spent more time "troubleshooting" than operating during his week's stay at 3A2AW last June. He had to rebuild 3A2AM's gear and was confined to 14 Mcs. Using 80 watts, 150 contacts were made

This busy scene, taken during the last CQ World Wide DX Contest, when this station was on continuously, shows, l. to r. Major Ed Pollard, "Polly" HC1EP, Lt. Col. "Will" Boyd HC1MB and, at the mike, Major Clarence Bethke HC1CB.

Deborah Kerr talks over the *CQ*-YASME DXpedition with Danny, VP2VB/P, just before he set sail on his one-man round-the-world cruise aboard the 40 foot Bermudian sloop YASME. In the background is CQ's DX Editor Dick Spenceley, KV4AA, who helped Danny procure and install the two Elmac AF-67 transmitters and two Elmac PMR6A receivers which go to make up the bulk of the ham equipment to be used on the trip.

Tentative plans have been made to call at the following spots if all goes well: British Phoenix Islands, Tokelau (Union) Islands, Nauru Island, Solomon Islands, Portuguese Timor, Andaman and Nicobar Islands, Laccadive Islands, Maldive Islands, Seychelles Islands, Mafia Island, Aldabra Island, Comorro Islands, St. Helena, Ascension Island, etc. The radio equipment will be taken ashore in each spot visited so that there shall be no question as to accepting the contacts for country credits.

CQ will keep you up to date on where Danny will be and when he expects to get there. Right now he is on the first leg of his journey, having left the Virgin Islands at the end of July sailing for Cristobal, Canal Zone.

with 20 of them being W's. . . . W8YIN nabbed ZM6AS at 0500 GMT. Les was on 14068 but generally answers calls from 10 to 15 kc. higher. . . . HP1EH, who is quite active on CW, is HH2LD. QTH appears in August CQ. Louis runs a B and W 5100 rig with the rx being a National NC-98. He will QSL 100%. . . . Gus, W2HMJ, snagged VQ8AB on 14015 at 0430 GMT and also reports FC7GE on 055 from Corsica (?). . . . Al, W8PQQ, reports MP4BBV on A3 from Bahrein, 14120, around 1300 GMT. . . . A new KV4 is Jack Ohmeis, KV4BM, of Christiansted, St. Croix, V.I. who will sport a KWS-1. . . . W4VDF and W4AMW returned home on July 6th after an animal collecting expedition in the interior of Nicaragua. VDF was licensed as YN4BB and AMW as YN4TE. Two days were also spent on Swan Island using /KS4. . . . F9RS reports new ones in Dakar as FF8AK, FF8BH, FF8BL and FF8BM. See QTH's. . . . HE1OP has been active from Liechtenstein. QSL's should go via HB9OP. . . . W2QHH advises that Greenlands KG1 calls were alloted via State Dept. agreement and not via any territorial arrangements which might give them separate country status. . . . FA9RW reports that W6NIF/4 will soon be on Caicos as VP5ZZ. . . . G3FXG appeared from I1CUT and advised that he had been granted the first mobile ticket in 3A2-land. . . . K2EDL worked ZD9AC at 1125 GMT on 14063. The ZD9 said he was a phone man and only appeared on CW now and then. . . . CR4AL was worked on 14038 at 1130 GMT. . . . A minor disturbance was caused on 14 Mcs., July 17th, by the appearance of a station signing AC0AA. He gave his name as "Tow" and QTH as Unamshi, North Sinkiang—we are not too much impressed. . . . OK1MB reports UA0KTI is active from Tannu Tuva. . . .

DX'ploits

Frank, W6SYG, leads off our DX'ploit list with the addition of FW8AW for Number 255. . . . Roger, W3EVW, goes to 247 thanks to MP4QAL and KC6CG while Glenn, W6ADP, adds VS4CT, HK0AI, EA9DF and PJ2MA for 246. . . . Oscar, W3JNN, makes it 242 and 211, phone only, with help from LZ1KAB, TI9MHB, KC6UZ, FY7YE, ZS2MI, VR6AC, MP4QAH, VS4CT, PJ2MA, VP8BF and UB5KAB as Jack, W6NTR, ups to 206 with HK0AI, FB8BR, SU1IC, YJ1DL and VQ6LQ. . . . Don, W6LRU, snagged HK0AI, YJ1DL, VS4CT and ZD6BX to hit 198 while Vip, W6ID, rises to 163 with I1BNU/T and FM7WF. . . . Van, W9HUZ, adds YJ1DL and VR6AC for a 223 total as Ray, VK4FJ, goes to 217 with ET3S, ZS2MI, CE0AD, KS4AW, VP5DC and FW8AB. . . . Hal, W5FFW, adds nine which include YO3RF, ZD8AA, ZD3A, MP4QAL and PJ2MA for 220 while Joe, W8UAS, pulled in VR6AC for his number 217. . . . Ollis, W9MXX, comes up to date with 18 new ones to rest on 215 while Chas., W3DKT, came up with FK8AH for his number 214. . . . Buck, W4RBQ, slides to 205 thanks to PJ2MA and YJ1DL as Carl, W9ABA, adds 14 which include SU1IC, LU9ZM, VR3A, KM6AX, VK1AC and ZS9I to reach 194. . . . Denver's outstanding performer, Clif, W0AZT, tips the scales at 191 with help from such as OY7ML, EA9AP, ST2AR, VS5CT, ZD2DCP, KC6CG, PJ2MA and VQ6LQ while Bob, W0QVZ, steps to 165 with EA0AC, 5A4TK, VK9OQ and PJ2MA. . . . Bill, W1HA, hits 219 with ZA1BB, MP4QAL, 3A2AW, PJ2MA and ZM6AS as DX'erama Sam, W3AXT, ups to 173 with ZD6BX, UA0KAB and KM6AX. . . . John, W9WCE, rises to 162 thanks to such as VP5AE, EA6AU and 3V8AB while JA1CR, Takeo, enters the HONOR ROLL with a 127 total for the first Japanese national on the list. . . . Dixie, W2ZVS, makes it 179 with KC6CG, VQ8AG, JZ0AG, VK9RM (TNG) and OY7ML while Harry, W0ANF, goes to 167 with JZ0AF, UA1KAI and LZ1KAB. . . . Mickey, W8YIN, leads the 35 zoner's with a 187 total thanks to BV1US and ZM6AS while Ned, W1RAN, sneaked in VQ6LQ for his number 154. . . . In the phone-only section, Don, W6AM, miked with SV0WM and VS4CT to rise to 187 while Lou, W1MCW, reaches the imposing total of 222 with ZD8AA, KC6UZ, VS5CT, VR6AC and VK9OK. . . . K2BU's new quad accounted for KM6AX, ZD3A, KC6CG and HZ1AB. . . . Hal, VE3IG, rejoices about QSL from EA9AP giving him an even 100 cards. His "worked" total went to 108 with LZ1KSI, HK0AI, FY7YE, VQ6LQ and YO2VM. . . . On July 4th KH6ES completed his 458th QSO with VQ2AB! . . . VQ8AX was No. 171 for W2DTV. . . . VK4FJ, who handles VK1EG QSL's advises that Bill, VK1EG, is the only VK1 that has contacted over the hundred mark. He worked 112 countries from the Mawson Antarctic Base and has 79 confirmed. QSL's will be answered directly if accompanied by an IRC coupon, if not, they will go via ISWL in London. . . . Fred, W5AVF, made it 156 with I1DCO/M1. Others heard contacting Gino were W5VGR, W3MFW, W2AZS, W5FXN, W5CEC and W5VIR. . . . Brad, KP4TF, reached 100 with VQ3FN. . . . VK9AU gave Phil, W1ZDP, his No. 125 in two years operating time. . . . DL7BA is up to 121 (106 phone) on 21 Megs with such as ZD9AC, OY7ML, HS1P, ZD3BFC, YK1AK and UB5KAB. Also, MP4BBL, MP4BBV and HE1OP were heard. . . . Alex, W9EU, added QSL's from EA8BK, CR7LU, FY7YE, HK0AI, HZ2AEH, LU1ZT, CP2DN, VP5BP, VU2AS and ZS3T. . . . Bob, W4GCB, is up to 22 as his GLOBE SCOUT reached out to raise VP1FL, SP5AA and YU2IP. . . . From JDXRC Mag.: JA6BF rec'd QSL from UA9KCC via the LZ bureau. QSL's from LU0MA, Nepal, came to JA9BE, JA0BR and JA2DN. JA6AD reached 142 with MP4JO and EA0AB and also reports a contact with KE6AA who said he was W3SKE operating

Snapped by OH1NK/0 just prior to their DX-cursion to Aaland Island. Sitting is OH1RX/0 and standing, l to r, are OH1SS/0, OH1PP/0 and OH1ST/0. 274 contacts were made during their stay May 21st and 22nd including 70 W's. (Photo courtesy of Dave, KN2KHZ)

from Edward Island (?). W1HA was issued the 2nd AJD certificate for W-land. . . . JA6AD has 47 states salted away needing only New Hampshire. . . . Joe, W8KBT, reached 68 on fifteen meter phone with YN4CB, YS1RA, VP5AE, OE6OK, CX2CN and ZL1BY. . . . At DL4ZC, Lloyd accounted for such as ZD6RM, YK1AK, IS1FIC and CR7CK on 21 CW, AP2Y, JZ0AG, LX1JW, CR9AI and ZD2HAH on 14, PX1ZA and OY7ML on 7 plus TF5TP and OY7ML on 3.5 Mcs.

New DX Addresses

AP2T	Tam, Box 502, Karachi, Pakistan.
FF8AK	Claude Laget, B.P. 1691, Dakar, FWA.
FF8BH	Jean Germain, B.P. 3014, Dakar, FWA.
FF8BL	Jacques Bonnafous, B.P. 971, Dakar, FWA.
FF8BM	Henri Peltier, B.P. 971, Dakar, FWA.
HE1OP	Via HB9OP.
I1DCO/M1	Gino, Box 20, Ferrera, Italy.
KL7AWB/5	ex-W2EHU/W3MTQ/W4SEB/W9BNB/J3-Joe Williams, 1904 Calle de Suenos, Las Cruces, N. Mex.
KV4BM	Jack Ohmeis, Christiansted, St. Croix, V. I.
VK9OQ	Doug Lloyd, Box 56, Port Moresby, Papua T.
VP1FL	Via W2HQL.
W4EPA	Clayton Merrill, 40 East Ridge Pl., Newport, Ky.
W6GAL/7	Box 370, Rte. 8, Tucson, Ariz.
XW8AB	Marcel Zinck, Haute Representation Francais, Vientiane, Laos.
YI3WW	Allen, P.O. Box 293, Baghdad, Iraq.

Thanks to the West Gulf Bulletin, W0QVZ, F9RS, KV4BD, W4IIQG and W5CFG.

Here and There

The W9-DXCC Club will hold its annual meeting on Saturday, September 17th, at the Sheraton Hotel, Chicago. The meeting starts at 2 PM and for further details contact W9FID. . . . W4EPA moves to Newport, Ky. on August 1st. . . . OH, LA, SM and OZ hams held a hamfest at a summer camp from July 11th to 17th. Contacts were made on 3.5, 7, 14 and 21 Mcs. with the call of SM3XA. . . . KV4AA logged visits from W6OXS, W6VUP and KP4WN. . . VR3A suffers from rx troubles but has new rx on way. He plans to visit W-land around middle January. . . . Jerry, W1PST, was due to be married on July 3rd. His honeymoon trip included visits to VP9, VP4, YV and CO-lands. Yep! the XYL has her novice ticket. Best wishes Jerry and XYL. . . . Bob, W6OXS, volunteers the following info for anyone interested in a St. Martin trip: One may travel from Miam to San Juan, P.R., round trip tourist flight, fo $86.00 plus tax. Then via Air France from San Juan to St. Martin on Mondays only, for abou $37.50 round trip. As Air France lands on St Martin on Mondays only a week's stay (two weeks etc.) must be made there. Baggage allowance from Miami is 44 lbs. per person. On Air France it is 68 lbs. . . . Andy, W6OME, bemoans the fact that the boys just don't respond to his calls like at TA3AA! . . . New officers at the La Rochelle (France) ARC are: Pres K2CJS/F7ER, V.P. K0BGZ. . . . Officers a the North Calif. DX Club are: Pres. W6GPB V.P. W6KEK, Sec'y Treas. W6KEV, Edito "The DX'er" W6CTL. . . . OE13USA closed shop as of July 27th. Op Marty, K2IXD wil be home in Brooklyn in October while Op Doug, W6HVN, is contemplating some duty in Eritrea but should be home by March '56

Halul Island

Via the West Gulf Bulletin we quote part of a letter from MP4QAL to W5ALA which may give pause to those who have been crediting Halul as Qatar: "From well informed sources I find I have been misleading you fellows from the time I fired up at MP4QAL. Apparently the ownership of Halul has been in dispute for a long time between the Sheik of Qatar and the Sheik of Abu Dhabi. The latter being in Trucial Oman, down the coast from us. An arbitration Court has now settled ownership on the Sheik of Abu Dhabi. That means that I am an Oman

WAZ Honor Roll

CW AND PHONE

W1FH	261
W6VFR	256
W6AM	256
PY2CK	255
W6ENV	255
W6SYG	255
W6AOA	253
W0YXO	252
W6MX	252
W6MEK	252
W8HGW	251
W5KUC	251
W6SN	251
G6ZO	250
W8PQQ	250
W9NDA	250
W2AGW	250
W8NBK	249
W3GHD	249
W2BXA	248
W8BHW	248
W8JIN	247
G6RH	247
W3EVW	247
W3BES	246
W3KT	246
ZL2GX	246
W6ADP	246
W6DZZ	245
W7AMX	245
VE4RO	242
W3JNN	242
W3JTC	*240
W3GAU	*239
W6GDJ	239
W7BD	239
W6VE	238
W6GRL	*237
W6TS	237
W6MEK	*236
CE3AG	236
W3CPV	*235
LU6DJX	*234
W6AMA	*233
SM5LL	233
G2LB	232
G4CP	*232
W7DL	232
VK2ACX	230
W7GUI	*229
W0ELA	229
W8BRA	*228
W6TI	228
W6EBG	*227
W6DLY	227
W6PFD	*226
W6SAI	224
W0PNQ	224
W6EFM	224
DL1FF	223
VK3BZ	*223
OE1ER	223
W6UHA	223
ZL1BY	223
W3LOE	*222
W6FSJ	*222
W3BHV	*222
W6MVQ	*221
W6PB	*221
G6QB	*221
CE3DZ	221
SM5KP	220
W6CYI	220
W6EPZ	220
W6ITA	*219
W6TT	*218
W0NUC	*218
W6PQT	*218
G2PL	*218
KH6IJ	*218
W0DU	218
W6PKO	218
G8IG	218
W9DUY	*217
W2PEO	*215
W6BUD	215
W3IYE	*214
PY1DM	*214
ZS2X	*214
KH6BA	*214
W6DI	214
W6CEG	*213
W4AIT	*213
KH6CT	*213
VK4HR	*213
W6RBQ	*213
PY1AHL	213
W6HX	*212
VE7HC	*212
W5GEL	212
W6NNV	*211
W6BPD	*210
W6MJB	*210
W6IBD	*210
W9VW	*209
W6RW	*209
W2AQW	*208
ZL1HY	*208
W6SC	*207
VK3KB	207
G4MJ	207
VE7VM	*206
W4BPD	*206
W6SR	206
W6NTR	206
W6ERI	*205
G3DO	205
W6ZCY	*204
VK2DI	*204
W6AVM	*204
DL7AA	*204
W4CYU	*203
W6HJT	*203
LU8EN	203
W6RM	*202
W6OMC	*202
G2MI	202
W6LDD	202
W6LW	201
W9KOK	*200
VK5JS	200
W7OY	*200
W6MHB	200
ON4QF	200
W6LN	200
PY1GJ	*199
W6RLN	*198
W6SRF	*198
W6UCX	*198
W6LRU	198
W2IOP	*197
KH6QH	*197
PY1AJ	*196
W6WB	*196
G2FSR	*196
I1KN	*196
W5KC	*195
OK1FF	*194
W6GAL	*193
W6EHV	*193
W0SQO	*192
W6NGA	192
W6WWQ	192
VK2NS	*191
W6SRU	*190
VK3JE	*189
ON4JW	*189
W0NTA	*188
W8SDR	186
VK6RU	*186
W6DFY	*186
W6BAX	*197
W4CYY	*186
W2CZO	*185
W1AB	*185
W6IFW	*185
W7ENW	185
W6SA	*184
KH6VP	*184
W6PCS	184
W2JVU	*183
DL1IB	*183
LA7Y	*182
VK4EL	*182
SM7QY	182
ZS2AT	181
PY1BG	*179
W9VND	*178
W0UOX	*177
VE6KW	*177
W6UZX	*177
W6LGD	177
CX1FY	*176
KH6CD	*176
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W8HUD	*175
W6WKU	*174
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W7FZA	*174
W6KUT	*174
W6TZD	*173
W6JK	173
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OK1LM	*172
OK1HI	*171
W6BAM	*170
DL1AB	*170
W6PZ	170
W5AFX	*169
G2VD	*169
W6CTL	169
W6JZP	*168
W6ANN	*167
VK3CN	*167
W6BVM	*167
I1XK	*167
W6ATO	167
W6DUC	*166
KH6MI	*166
W6CEM	*166
VE7GI	*165
W6BZE	*165
W6PM	*164
ZS6A	*164
W6EAK	165
W6YZU	165
G5GK	*163
W6ID	163
VE7VO	*162
ZS6DW	*162
I1IR	*162
W6PDB	*161
OK1SV	*160
VE3EK	*160
W5PUY	*160
JA2KG	*160
KH6MG	*160
W6ONZ	160
OH5NK	159
W0FFV	*158
W0OUH	*157
G3TK	*157
W6BUY	*157
W6QD	*157
ZS6FN	*157
W7BE	*156
KH6IG	*156
DL1DC	155
VK5KO	*155
W6BUO	155
G3AAM	*154
G2IO	*154
W6RLQ	*154
W6KEV	*153
W6FHW	*153
OK1RW	*153
G3YF	*152
KP6AA	*152
VK2QL	*151
VK2AM	*151
W6LEE	*150
W6FHE	*150
W6EYR	*150
W6LER	*150
W6BIL	150
W6NZ	148
OK1CX	*147
W6LS	*147
W7KWC	*147
KH6PY	*147
W7DXZ	*146
W6AYZ	*146
VE6GD	*146
VS6AE	*146
W9NRB	*145
W6MUC	*145
OK2SO	*145
ON4TA	*144
G3BI	*144
W7LYL	*143
KG6GD	*143
W3IXN	*141
W6AOD	*140
VK2PV	*140
ZC1CL	*138
OK1WX	*135
W7BTH	*135
G3AZ	*133
W6TEU	*133
W6RDR	*133
W6AUT	*133
VE7KC	133
W6OBD	*131
ZS2CR	*131
CR9AN	*131
W6IDZ	*130
W7ASG	*129
W7GBW	*127
G8IP	*127
G5BJ	*126
VK6SA	*126
PK6HA	*124
G5VU	*124
W6NRQ	*123
W6MLY	*123
ZL1GX	*122
VK5MF	*121
ZL2CU	*120
ZS2EC	*116
ZS6CT	*113
W6DVB	*104
KG6AL	*103
W7KWA	*98
W6DUB	*89
W7IYA	*59

39 ZONES

W5ASG	249
W8KIA	245
KV4AA	245
W2WZ	243
W1CLX	238
W3EPV	234
F8BS	232
W2NSZ	232
W9RBI	230
W3DPA	230
W2QHH	228
W1HX	226
W8DMD	225
4X4RE	224
W3OCU	224
W9LNM	224
W9FKC	224
W9HUZ	223
W1JYH	222
W1BIH	221
W3DRD	220
W4GG	220
W5FFW	220
W1GKK	219
W2BJ	219
VK4FJ	217
W8UAS	217
W9MXX	215
W3DKT	214
CO2SW	213
W1ZL	212
W5MPG	211
W3KDP	211
KP4KD	210
W2HHF	208
W8HFE	207
W4LVV	205
W4RBQ	205
W2EMW	201
W6GPB	197
W9ABA	194
VE3AAZ	192
W2IMU	192
GM3CSM	192
W0AZT	191
G3FXB	187
W6WO	179
W2RGV	178
W8VLK	177
VK3XO	174
W4DKA	172
W7ONM	171
W0QVZ	165
G6QX	162
W6CAE	161
W9NZZ	160
ZL4BO	157
W6CUL	154
W6MUF	149
TF3SF	145
W9ALI	144
W7HXG	136

38 ZONES

TI2TG	221
W8JBI	219
W1HA	219
PY4IE	215
W2HMJ	208
GM3EST	202
W2GVZ	193
W5KUJ	191
W0TKX	189
W8KPL	188
W2SHZ	180
W9VP	177
W1BFT	174
W6TXL	170
F9AH	167
W4LQN	164
OE1FF	158
W3LVJ	157
DL1YA	153
W6ETJ	144
VE6MN	131

37 ZONES

W6KYG	200
KP4CC	200
W4HA	194
W1KFV	177
W4EPA	175
OZ7BG	174
W1WY	174
W3AXT	173
W2OST	169
VE3LJ	167
W9LI	164
W3WU	162
W9WCE	162
W6YK	144
W1APA	138
JA1CR	127
OH3OE	124
I1ER	114

36 ZONES

W5JUF	206
W2ZVS	179
W0AIH	176
W0ANF	167
W3AYS	151

35 ZONES

W8YIN	187
KV4BB	185
KG4AF	182
W5FXN	176
W2HSZ	159
W1RAN	154
W2AZS	142
EA4BH	127
W6ZZ	135
ON4QX	128
W5AWT	125
ZL3CP	121
W6HJ	121
W2HAZ	115

PHONE ONLY WAZ

VQ4ERR	223

39 ZONES

PY2CK	235
XE1AC	217
W6DI	211
W3LTU	206
G8IG	191
W6VFR	184
PK4DA	175
W7HTS	161
W8HUD	161
F9BO	158

38 ZONES

W9NDA	219
W2BXA	204
W9RBI	202
SM5KP	199
W6KQY	188
W6AM	187
W4CYU	160
ZL1HY	157
W1HKK	153

37 ZONES

W3JNN	211
ZS6Q	192
W3BES	190
W1JCX	189
CE3AB	186
W3GHD	184
W8BF	183
G3DO	183
W8REU	176
VK3BZ	173
W6PXH	159
W0HX	157
W6TT	145

36 ZONES

W1MCW	222
W1NWO	209
W4HA	188
W5ASG	184
TI2TG	182
W1BEQ	164
GM2DBX	163
W9BVX	160
W4ESP	159
W2DYR	140

35 ZONES

HC2JR	178
W5JUF	171
W3EVW	169
W0NCG	167
W9RNX	155
W6PCK	152
W2RGV	148
W0ANF	145
W6CHV	144
PY2JU	140

*No change in total for two years or more.

Stations, other than full WAZ members, whose totals have shown no change in two years or more, have been dropped from the listings. This does not apply to the first ten stations for any zone. Reinstatement will be made upon the receipt of a report showing additions.

station now. Tony Mould, MP4QAH, my predecessor on Halul indicated to his contacts that he belonged to Qatar. On my return to Halul I shall state that I am now "Trucial Oman". What a mess! (agreed). . . ."

Fergus Walshe, MP4QAL

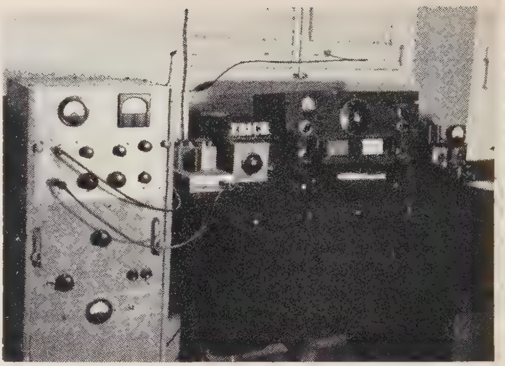
Russian Calls

As the thaw seems to be setting in and there is a good possibility that the Russian hams will soon be allowed to again contact the outside world we think it is timely to print the following information and tables which, tho possibly not complete, have been invaluable in establishing the locations of most Soviet ham stations. This info has been compiled by two British hams with a knowledge of the Russian language and access to radio periodicals published in the U.S.S.R. and appeared in SHORT WAVE MAGAZINE, March, 1953.

The greater part of the Soviet Union is known as the Russian Federated Socialist Republic and the callsign districts within this area consist of UA1, 2, 3, 4, 6, 9 and 0. For administrative purposes each of these districts is divided into *oblasts* which correspond roughly to our counties (states). In most cases the oblast is named after the principal city therein which forms the capital of the oblast. In the following list of oblasts the exceptions to this rule are followed with the name of the capital in brackets:

UA1: Leningrad, Archangel, Pskov, Novgorod, Vologda and Murmansk.
UA2: Kaliningrad (Formerly East Prussia).
UA3: Moscow, Gorky, Ivanovo, Tambov, Tula, Smolensk, Bryansk, Vladimir, Voronezh, Ryazan, Kursk, Kaluga, Yaroslav, Orel, Kalinin, Kostroma and Velikye Luki.
UA4: Stalingrad, Penza, Kuibyshev, Ulyanovsk, Mari (Ioshkar-Ola), Udmurt (Izhevsk), Mordov (Saransk), Chuvash (Cheboksary), Saratov, Kirov and Tatary (Kazan).
UA6: Rostov, Krasnodar, Crimea (Simferopol), Kabardin (Nalchik), Astrakhan, Dagestan (Makhach-Kala), N. Osetin (Dzau-Dzhikau), Stavropol and Grozny.
UA9: Sverdlovsk, Chelyabinsk, Komi (Syktyvkar), Bashkir (Ufa), Altai (Barnaul), Molotov, Kurgan, Novosibirsk, Tomsk, Omsk, Tyumen, Chkalov and Kemerovo.
UA0: Khabarovsk, Krasnoyarsk, Chita, Primorsky (Vladivostock), Irkutsk, Yakutsk, Tannu-Tuva (Kyzyl) and Buryat-Mongolia (Ulan-Ude).

Is it, perhaps, not generally known that the letter following the numeral in Russian callsigns is a direct indication of the oblast in which the station is located—in the case of collectively-operated (Club) stations which have a 3-letter suffix the K which follows the numeral should be ignored. Referring to the table, which follows, the location of any station using the prefix UA may be obtained. Thus UA9FB would be located in the Molotov Oblast, while UA4KAB would be in Stalingrad and so on. In the case of the non-federated republics, viz., the Ukraine, UB5, Byelo-Russia, UC2, Azerbaijan, UD6, and others, these are also divided into oblasts, but the system is NOT used in the allocation of call-signs; therefore, calls such as UB5AA, UB5AB or UB5AC may be located in widely separated oblasts of the Ukraine.



Operating position of ZB1CH, Operator C. Holmes of Rabat, Malta. 100 watts is run to a pair of 807's to a dipole antenna. Chas. held the call of VP9E from '46 to '48.

The Soviet Union covers all or part of nine DX zones as follows:

Zone 15: All UA2, UP2, UQ2 and UR2.
Zone 16: All UA1 except Franz Josef Land and Novaya Zemlya both of which are in the Archangel Oblast. All UA3, UA4, UA6, UB5, UC2, UN1 and UO5. UA9—Bashkir and Chkalov only.
Zone 17: UA1—Novaya Zemlya only. UA9—Sverdlovsk, Chelyabinsk, Komi, Kurgan, Molotov, Omsk, Tyumen oblasts. All UH8, UI8, UJ8, UL7 and UM8.
Zone 18: UA9—Novosibirsk, Tomsk, Kemerovo and Altai only. UA0—Krasnoyarsk, Irkutsk, Chita and Buryat-Mongolia.
Zone 19: UA0 — Khabarovsk, Yakutsk, Primorsky and the northern half of Sakhalin Is. (Khabarovsk Obl.)
Zone 21: All UD6, UF6 and UG6.
Zone 23: UA0—Tannu Tuva only.
Zone 25: UA0—Southern half of Sakhalin Is. only.
Zone 40: UA1—Franz Josef Land (Archangel obl.) only.

		Zone
UA1A-, UA1B-, UA1C-, UA1D-, UA1F-, UA1KA-, UA1KB-.	Leningrad.	16
UA1N-, UA1O-, UA1P-, UA1KE-, UA1KF-	Archangel.	16
UA1Q-, UA1KI-.	Vologda.	16
UA1T-, UA1KM-.	Novgorod.	16
UA1Z-, UA1Y-.	Murmansk.	16
UA2A-, UA2KA-.	Kaliningrad.	15

Reminder
Brazilian "Labre Contest"

CW Section—0001 GMT Saturday, Sept. 3rd. to 2400 GMT Sept. 4th.

Phone Section—0001 GMT Saturday, Sept. 10th to 2400 GMT Sept. 11th.

		Zone
UA3A-, UA3B-, UA3C-, UA3D-, UA3F-, UA3G-, UA3H-.	Moscow.	16
UA3KA-, UA3KB-, UA3KC-...	Moscow.	16
UA3I-, UA3KE-.	Kalinin.	16
UA3M-, UA3KH-.	Yaroslavl.	16
UA3N-, UA3KI-.	Kostroma.	16
UA3P-, UA3KK-.	Tula.	16
UA3Q-, UA3KL-.	Voronezh.	16
UA3R-, UA3KM-.	Tambov.	16
UA3S-, UA3KN-.	Ryazan.	16
UA3T-, UA3KO-, UA3KT.	Gorky.	16
UA3U-, UA3KQ-.	Ivanovo.	16
UA3V-, UA3KS-.	Vladimir.	16
UA3W-, UA3KU-.	Kursk.	16
UA3X-, UA3KW-.	Kaluga.	16
UA3KY-.	Bryansk.	16
UA4A-, UA4KA-.	Stalingrad.	16
UA4C-, UA4KC-.	Saratov.	16
UA4F-, UA4KE-.	Penza.	16
UA4H-, UA4KH-.	Kuibyshev.	16
UA4M-, UA4KK-.	Ulyanovsk.	16
UA4N-, UA4KN-.	Kirov.	16
UA4P-, UA4Q-, UA4R-, UA4KP-.	Tatar.	16
UA4S-, UA4KS-.	Mari.	16
UA4KU-.	Mordov.	16
UA4KY-.	Chuvash.	16
UA6A-, UA6KA-.	Krasnodar.	16
UA6F-, UA6KE-.	Stavropol.	16
UA6J-, UA6KV-.	N. Osetin.	16
UA6L-, UA6KO-.	Rostov.	16
UA6P-, UA6KP-.	Grozny.	16
UA6S-, UA6KS-.	Crimea.	16
UA6U-, UA6KT-.	Astrakhan.	16
UA6KW-.	Dagestan.	16
UA9A-, UA9KA-.	Chelyabinsk.	17
UA9C-, UA9D-, UA9KC-, UA9KD-.	Sverdlovsk.	17
UA9F-, UA9KE-.	Molotov.	17
UA9H-, UA9KH-.	Tomsk.	18
UA9J-, UA9KJ-.	Tyumen.	17
UA9M-, UA9KM-.	Omsk.	17
UA9O-, UA9KO-.	Novosibirsk.	18
UA9Q-, UA9KQ-.	Kurgan.	17
UA9S-, UA9KS-.	Chkalov.	16
UA9U-, UA9KU-.	Kemerovo.	18
UA9W-, UA9KW-.	Bashkir.	16
UA9Y-, UA9KY-.	Altai.	18
UA0A-, UA0KA-, UA0KB-...	Krasnoyarsk.	18
UA0F-, UA0KF-, UA0KG-...	Khabarovsk.	19
UA0L-, UA0KK-.	Primorsky.	19
UA0O-, UA0P-, UA0KO-....	Buryat-Mongol.	18
UA0KQ-.	Yakutsk.	19
UA0S-, UA0KS-, UA0KT-...	Irkutsk.	18
UA0U-, UA0V-.	Chita.	18

Via F9RS we are advised that the following DX'pedition to Andorra was scheduled to have been on the air from August 7th to August 14th under the officially licensed (but temporary) call of "PX1EX/P". Four French hams made this trip: F8EX Jean, F8EO Francois, F3IB Andre and F9UK Ray. Operation took place atop Maya peak at Port d'Envalira, Andorra, at an elevation of some 8,800 feet. Activity was planned on CW and phone using the 3.5, 7, 14 and 144 Mcs. bands with an 807 final on the lower frequencies. Receiver was an HRO plus converter. All QSL's should go via REF. Hope you snagged 'em! . . . 5A2TZ QRT's and returns home in September. . . . We understand that authorization has come through allowing W's to contact Laos which is now very actively representated by XW8AB (He skeds VQ8CB on 14010 around 1215 GMT) so Laos may now be credited on the WAZ lists. . . . EA4BH reports that electricity will be available in IFNI around October and an expedition to that spot will be seriously considered. . . . A trans-atlantic phone call by PA0UN to W1UWB resulted in the info that W1UWB has just left for town. This seems to put

[*Continued on page 112*]

K6AQR, Guy Kane, of West Sacramento, Calif. The final amp., at right, uses PP 4-400A's with vacuum variables in the tank. In 1946 Guy operated from KZ5NJ, returning to W9SRB in '47. In '48 he was stationed in Germany with the Signal Corps and ran up a total of 39 zones and 178 countries as DL4FS. In 1950 Guy put LX4FS on the air and was the first ham signal to be heard from Monaco, in the same year, with 3A2AB. Here is a case of the DX becoming the DX'er. (Photo courtesy of the North California DX'er)

Rules For The 1955

World-Wide DX Contest

1. Contest Period:

PHONE SECTIONS: 0200 GMT October 22 to 0200 GMT October 24
CW SECTIONS: 0200 GMT October 29 to 0200 GMT October 31
(See time chart for local times and dates.)

2. Bands:

The contest activity will be in the 1.8, 3.5, 7, 14, 21 and 27/28-Mc amateur bands.

3. Types of Competition:

Competition will be divided into four sections as follows:

a) One-operator phone section

b) Multiple-operator phone section

c) One-operator CW section

d) Multiple-operator CW section

e) Inter-club competition

4. Equipment:

There will be no limit to the number of transmitters and receivers allowed, and competitors may use the maximum transmitter power permitted under the terms of their licenses.

5. Serial Numbers:

CW stations will exchange serial numbers consisting of five numerals, the first three being the RST report, and the last two being their own Zone number. Stations in Zones 1 through 9 will prefix their Zone number with zero (01, 02, 03, etc.). Phone stations will exchange serial numbers consisting of four numerals. The first two being the readability and strength report, and the last two being their own Zone number. Phone stations in Zones 1 through 9 will prefix their Zone number with a zero (01, 02, 03, etc.).

6. Points:

Contacts between amateur stations on different continents shall count 3 points; contacts between amateur stations on the same continent, but not in the same country, shall count 1 point; contacts between stations in the same country, for the purpose of obtaining Zone and/or country multipliers, shall be permitted, but no QSO points will be allowed for these contacts. More than one contact between stations on each band will not be permitted.

7. Multipliers:

Two types of multipliers will be used: (1) a multiplier of 1 for each Zone contacted on each band, (2) a multiplier of 1 for each country worked on each band.

WORLD-WIDE DX CONTEST SCHEDULE

First weekend—Phone
Second weekend—CW

Time Zone	*Starting Time*	*Ending Time*
Greenwich Mean Time (GMT) (London)	Saturday, Oct. 22, 0200 Saturday, Oct. 29, 0200	Monday, Oct. 24, 0200 Mondav, Oct. 31, 0200
U.S.A. Eastern Standard Time	Friday, Oct. 21, 9:00 PM Friday, Oct. 28, 9:00 PM	Sunday, Oct. 23, 9:00 PM Sunday, Oct. 30, 9:00 PM
U.S.A. Pacific Standard Time	Friday, Oct. 21, 6:00 PM Friday, Oct. 28, 6:00 PM	Sunday, Oct. 23, 6.00 PM Sunday, Oct. 30, 6:00 PM

(Results of the 1954 contest will be published in CQ next month)

WORLD-WIDE DX CONTEST LOG

CALL 4X4RE

COUNTRY Israel

PHONE ☐ C. W. ☒

LOG FOR 14 MC. BAND

(Use separate log for each band.)

CALL LETTERS OF OTHER OPERATORS

NR. OPERATORS one

DATE (GMT)	TIME (GMT)	STATION	SERIAL NUMBERS		FILL IN ONLY WHEN QSO IS A MULTIPLIER		POINTS (1 or 3)
			SENT	RECEIVED	WAZ ZONE NR.	NAME OF COUNTRY	
Oct 30	0700	CE3AG	57920	57912	12	Chile	3
"	0703	HZ1KE	58920	58921	21	Saudi Arabia	1
"	0706	W4KFC	59920	58905	5	USA	3
"	0707	W3GRF	59920	58905			3
"	0708	4X4BX	59920	59920	20	Israel	
"	0710	CR5AC	56920	56935	35	Port. Guinea	3
TOTAL NUMBER ZONES, COUNTRIES, POINTS:					5	5	13

Important Note: Fill in Zone number and Country ONLY FIRST TIME it is contacted on each band.

8. Awards:

Certificates will be awarded for each of the Sections as follows:

I. To the highest scoring stations on each SINGLE BAND in the following areas:

a) Each call area of the U.S.A.

b) Each licensing area of Canada and Australia

c) All other countries

II. To the stations having the highest combined total of ALL BANDS (or more than one band) in the following areas:

a) Each call area of the U.S.A.

b) Each licensing area of Canada, and Australia

III. Inter-Club Competition:

A certificate will be awarded to the DX Club having the highest total score in each country. For a club to enter, an officer of the club must submit a list of their club participants with scores. This list may include the score of single operator and multiple-operator stations. Each participating club station, when submitting his own station log, should indicate on his log the name of his club.

Certificates will also be awarded to each operator of each winning station in the multiple-operator sections. Also such special awards as the DX Committee shall choose to make.

IV. No certificate will be issued to any contestant operating less than five hours or having less than fifty contacts.

9. Scoring:

The contest score for each single band is the sum of the Zone and Country multipliers of each band, multiplied by the contact points of that band. The total all band score is the sum of the Zone and Country multipliers of all bands, multiplied by the total of contact points on all bands.

I. Everyone who sends in a log for a single band is eligible for a single band award only. No station is eligible for more than one single band award. If more than one single band log is submitted, indicate which band is to be judged.

II. Those who submit logs for two or more bands will be eligible for the all band award. For the purpose of club scores, all classes of individual scores may be included in the grand total.

10. Zones and Continents:

To check your own Zone number and continent for scoring purposes, refer to ARRL list or CQ (April 1953) as well as the WAZ maps. For continental boundaries the same as used for WAC will be recognized. Should any question arise as to the positive location of any station, the official definitions will be final. Copies of the Country and Zone list and contest logs are available from the address listed below, upon receipt of a stamped, self-addressed envelope, or in the case of overseas stations, unattached postage stamps. Please include sufficient postage.

All logs must be postmarked no later than December 15, 1955. Send logs direct to:

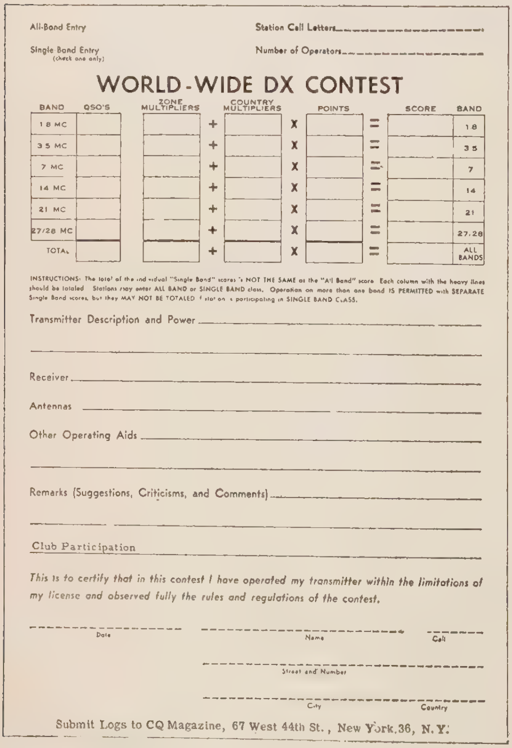
CQ Magazine
67 West 44th St.
New York 36, N. Y.
U.S.A.

Operating Suggestions:

Attention: Foreign Amateurs! It is recommended that you give the call letters of the station you are working at the end of a transmission, instead of just "BK" as this would prevent much QRM of stations piling on and calling you.

We suggest that overseas phone operators indicate which end of the band they are tuning, or which portions of the phone band (American or foreign) they intend to tune. On 28 or 21 Mc., it is extremely important that overseas phone stations specify the approximate frequency they intend to tune. CW stations, likewise, could greatly assist by indicating where they intend to tune. If the above principle is used by all, it will result in far less QRM, as well as fewer useless calls.

Foreign amateurs, remember scores are based on the greatest number of different countries and Zones as well as stations worked. Do not concentrate on working only U.S. stations, this is a World-Wide competition!



All-Band Entry
Single Band Entry (check one only)

Station Call Letters ____________
Number of Operators ____________

WORLD-WIDE DX CONTEST

BAND	QSO'S	ZONE MULTIPLIERS		COUNTRY MULTIPLIERS		POINTS		SCORE	BAND
1.8 MC			+		X		=		1.8
3.5 MC			+		X		=		3.5
7 MC			+		X		=		7
14 MC			+		X		=		14
21 MC			+		X		=		21
27/28 MC			+		X		=		27.28
TOTAL			+		X		=		ALL BANDS

INSTRUCTIONS: The total of the individual "Single Band" scores is NOT THE SAME as the "All Band" score. Each column with the heavy lines should be totaled. Stations may enter ALL BAND or SINGLE BAND class. Operation on more than one band IS PERMITTED with SEPARATE Single Band scores, but they MAY NOT BE TOTALED if station is participating in SINGLE BAND CLASS.

Transmitter Description and Power ____________

Receiver ____________

Antennas ____________

Other Operating Aids ____________

Remarks (Suggestions, Criticisms, and Comments) ____________

Club Participation ____________

This is to certify that in this contest I have operated my transmitter within the limitations of my license and observed fully the rules and regulations of the contest.

Date ____________ Name ____________ Call ____________

Street and Number ____________

City ____________ Country ____________

Submit Logs to CQ Magazine, 67 West 44th St., New York 36, N. Y.

Sample contest report form.

MIDGET BUDGET MODULATOR

[*Continued from page 45*]

So, the advantages of controlled carrier can be realized with no sacrifice in *overall efficiency*. Elimination of the modulation transformer results in a saving of both cost and space. One miniature tube can serve as both modulator and control tube, again saving cost and space in the mobile rig. Since the screen voltage of the final is held at a low level during periods when the operator is not speaking, the system automatically protects the final tube from high plate currents caused by mistuning or a loss of bias due to excitation failure.

Considering these advantages, the author designed the modulator illustrated in *Fig. 1* for use in a rig with a v.f.o.—5763—6146 r-f lineup. A dynamic or crystal mike drives V_1, a 12AX7 which is a cascaded amplifier with a gain of approximately 5000. The output of the second half of the 12AX7, approximately 150 volts peak to peak, is applied to both grids of V_2, a 12AU7. V_{2a} is used as an infinite impedence detector to provide a d-c voltage corresponding to the positive peaks of the audio signal. This d-c voltage on the cathode of V_{2a} is applied to the grid return of V_{2b}. V_{2b} is a cathode follower driving the screen of the 6146. The voltage at the grid of V_{2b} consists of the audio signal superimposed on a d-c voltage approximately equal to the positive peaks of the audio. Since the voltage at the cathode of V_{2b} very closely follows the voltage on its grid, this composite signal is applied to the screen of the 6146, resulting in controlled-carrier modulation. The low output impedance of the cathode follower results in an excellent modulation characteristic when driving the variable load represented by the screen of the r-f amplifier. It is true that 100% screen modulation cannot be achieved by driving the screen only to zero voltage with the audio signal, as is done in this modulator. (To completely screen modulate a tetrode, the screen must be driven slightly negative with respect to the cathode.) However, trapezoidal waveforms on a scope indicate that a satisfactorily high percentage of modulation is achieved, in the vicinity of 80%-90%.

The extreme simplicity and compactness is evident from the photographs. Th entire rig, with the exception of the v.f.o., fits inside a 5x10x3 chassis with room to spare, making a nice sized unit for underdash mounting. The small space requirements should make this modulator ideal for a CW man who would like to do a little phone work occasionally, but is unwilling to devote much space or money to a modulator.

On-the-air performance of this rig has been very encouraging. The quality reports have been good, and signal strength and readability have been all that reasonably could be expected with a transmitter of this power.

For the first time ever!

A full SINGLE SIDE BAND Transmitter – Receiver

Model SSTR-1

Complete in one compact unit
for fixed station or mobile use.

Amateur Net Price, $469.50 f.o.b., N. Y.

A new and unique design that employs 19 tubes in a truly bilateral array. Most of the tubes actually "about-face" so that now, for the first time, you can transmit or receive as a full ham station on "Single Side Band".

Never before so many "plus" features in so compact a unit!
Never before such tremendous quality at such an unheard of price!

SPECIFICATIONS

- Transmits or Receives on 10, 11, 15, 20, 40 and 80 meter bands with Panel Bandswitching.
- Transmits or receives full Single Side Band (suppressed carrier) AM, CW or Frequency Shift Keyed Signals. External audio oscillators required for Frequency Shift Keying.
- Choice of separate frequencies, within same band for transmission or reception with multi-band dual slide rule dials with 48/1 vernier. Separate tuning for receiver or transmitter.
- Transmission Peak Power Output average 15 watts all bands with 30 mv crystal microphone output.
- Receiver Sensitivity—2.0 microvolts for 6DB signal—to—noise ratio @ 3.1 kc bandwidth.
- Selectivity 3.1 KC at 6 DB and 5 KC at 40 DB.
- Images and spurious response 40 DB down.
- Panel controlled Q Multiplier with 30 DB peak or notch adjustment.
- Panel controlled carrier suppression adjustable from 30 DB down to twice normal microphone peak output voltage.
- "Magic Eye" Output Indicator.
- Panel choice of upper or lower sideband. Operates from an external power supply which can deliver + 300 V DC @ 175 ma,—100 V DC @ 5 ma and 6.3 V AC @ 7A.
- Voice control available, with external plug-in chassis, as an accessory.
- Additional accessories available—External AC power supply and 6 or 12 volt Vibrator Supplies.
- Dimensions—11" high x 21" wide x 14" deep.

EXTRA ACCESSORIES AVAILABLE!

- Voice control anti-trip unit as an accessory plug-in chassis
- External AC power supply as an accessory chassis
- 6 or 12 Volt Vibrator Power supply as an accessory chassis

Watch for the SSTR-1 on your dealer's shelves
For additional information and the dealer nearest you, write

A product of:

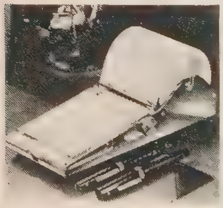
COSMOS INDUSTRIES, INC.

DEPT. C-9,
31-28 QUEENS BLVD.,
LONG ISLAND CITY 1, NEW YORK

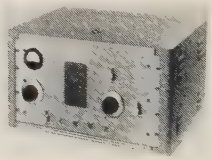
NEW PRODUCTS

Before you start on that California Kilowatt, pause and reflect on this bandswitching pi-network inductor just announced by Messrs. Barker and Williamson. The Model 850 network is designed for operation from 10 to 80 meters, and will handle a kilowatt with ease. The 10 meter winding is made of heavy silver plated strap, and the 15-20 meter winding is heavy tubing. Mounted on a steatite frame, with silver-graphite switch contacts, the 850 network is rated for operation at a hefty 3000 volts. If you have worn your right arm off twisting rotary inductors from 80 meters to 10 meters, trying to catch that elusive DX station, you should be overcome with joy at this gadget. One of these, plus a 160 µµfd. vacuum variable capacitor and a 4-250A tube, will make a mighty nifty KW that wouldn't occupy very much space. Interested? Barker and Williamson, 237 Fairfield Ave., Upper Darby, Penna., will gladly send you a specification sheet with the dope.

No, Cornell-Dubilier isn't competing with Uncle Sam in the manufacture of five cent pieces, as one might suspect from the photo. Rather, they are trying to impress you with the pee-wee size of their new type TH tantalum electrolytic capacitor. This little gadget, believe it or not, can be had in a capacity of 120 µfd. with a voltage rating of 18 volts. Other models (same size) range up to 100 volts working voltage. Just the thing for a cathode bypass unit in speech amplifier equipment. They will work up to a temperature of 125° C, too—so they should be hot-air proof (Attention, 80 meter phone men). Bulletin 529 will be sent you by Cornell-Dubilier with very little protest if you write to them at South Plainfield, N. J.

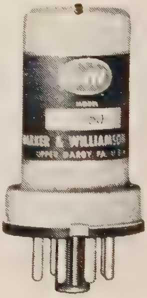


By George, why didn't somebody come through with this idea before? Here is a Rollmaster Memo pad that has a *250 foot* roll of paper in it. During the last DX contest I had my notes having calls, frequencies, etc. scattered all over the shack on the backs of envelopes, unpaid bills, bits of paper, etc. I found out about this gadget *after* the contest was over. Believe thee me, I am now all squared away for the next DX contest. This little ol' Rollmaster Memo pad is going to sit just to the right of the bug key. The pad is heavy enough not to slide around, and it comes complete with a magnetized pencil that sticks to the pad when you are not using it! This is so good, I feel like keeping it a secret. but—shucks, it's made by the Mayer Mfg. Co., 313 West 51st St., Chicago 32, Illinois. Along with the Arc Sparking Pencil (Guaranteed to draw a one inch ar from an 807) this pad will really go down in ham histor as a Number-One operating aid!



Those amateurs intereste in Single-Sideband should d a quick double-take at thi new linear amplifier developed by Transitron, Inc., 15 Spring St., N. Y. 12, N. Y The amplifier uses a pair o 812-A tubes, having a peak output of 500 watts SSB. Complete coverage from 8 meters through 10 meters is provided by a continuousl tuned grid circuit and a band-switched pi-network outpu circuit. Two 866-A rectifier tubes are included in a dynamically stable high voltage supply. For other than SSB operation, the amplifier is adjustable from Class A through Class C operation. All in all, a clean package delivering plenty of power with low harmonic content—yet extremely stable, and completely free of birdies and parasitics. If you have five watts of driving power available, this amplifier will lift you out of the bush league and put you in the Majors!

The National Company listened to the anguished bleats of the hams (and commercials) when they took their old-style right angle drive off the market. So here they are back again, with the red-hot model RAD (RAD= right angle drive—get it? HA.) right-angle drive unit. This baby has a die cast zinc housing and you can drive condensers or potentiometers located in a hard to reach corner with ease when you use this handy little affair. I suspect that the RAD is available right now at your local radio store. Hop down and pick one up for the XYL's birthday. She will love it. While you are about it, drop a line to National at 61 Sherman St., Malden, Mass. for their latest catalog of goodies.

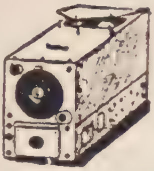


Well, here are Messrs. Barker and Williamson again!! This gadget which looks like a gaudy 6J5 is in truth an audio phase shift network designed especially for single-sideband work. Believe it or not, the tiny device will split any audio signal in the range of 300 to 3000 cycles into two equal components that are 90° out of phase with respect to each other. Armed with the Model 350, type 204 network, you can come up with a real simple phasing-type SSB exciter. B&W have done all the dirty work for you—at only $4.65, net! A trip to your local ham store will fix you up, or a letter to B&W, 237 Fairfield Ave., Upper Darby, Penna. will produce the desired results. See you on SSB!

Last but not least, we have this well-manicured hand holding the new ORYX sub-miniature soldering iron. Just about the size of a pencil, this rugged iron is available in a variety of designs—various tips, 6 volts, 12 volts or 110 volts—you name it! Made in Great Britain, this ½ ounce iron is available in W-land from the Television Accessories Co., Dept. 27, Box 6001, Arlington 6, Va. Throw out that 19c iron with the red-hot tip that vaporizes solder and get yourself a real tool. Go on, treat yourself to the best. You deserve it!

SAVE!... BARGAINS GALORE!...SAVE!

COMMAND — TRANSMITTERS — RECEIVERS



FAMOUS "Q" 5'rs

190-550 KC W/TUBES

XLNT COND. **$9.95**

BC-455 or ARC 5 Receiver 6-9 MC—with tubes for 4 Meters. Brand New	$5.95
Excellent .... $4.95 Used. As is less tubes	1.95
BC-454 or ARC5 Receiver 3-6MC—with tubes for 75 & 80 Meters. Brand New	$7.95
Excellent ..... $6.95 Used. As is less tubes	2.95
R-25 ARC5 Marine Band Receiver 1.5 to 3 MC. Brand New with tubes 28 V Dyn	$9.95
14 V Dynamotor above receiver—used XLNT	3.95
T-19 ARC5—3 to 4 MC XMTR. Excellent	8.95
T-19 and or 696 XMTR 3-4 MC. As is	5.95
BC457 XMTR 4-5.3 MC with tubes	4.95
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BC458 or ARC5. 5.3 MC. New with tubes, used for sideband. ECO	5.95
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BC459 XMTR. 7-9.1 MC. New, in original cartons	7.95
T-22 ARC5. New. 7-9 MC XMTR. Original Cartons Value $100.00	5.95
T-22 ARC5 XMTR 7-9 MC as is, less tubes	3.95
T-18 ARC5. 2.1-3 MC XMTR. Marine, 80 or 1[illegible] XMTR and Civil Defense. New with schematic Orig. carton	5.95
BC-456 Modulator. Xlnt with tubes	3.95
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MD7 Modulator. Push-Pull 1625 (12V-807) will [illegible]	5.95
AR5-R28 [illegible] VHF-2 [illegible]	9.95
ARF-T23 [illegible]	9.95
[illegible]	18.95

Meters—Weston • Sangamo

All New. All D.C. 2" Square.
0-2 Ma. 0-5 Ma. 0-15 Ma. 0-50 Ma. 0-100 Ma. 0-200 Ma. 0-300 Ma. 0-500 Ma.

$3.29 each or 3 for $9.00

DC VOLT METERS—2" SQ.

0-20 V. DC	$3.29 each
0-40 V. DC	or
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BC-375 Mod. XFMR. Matches pair of 6146's, 815, 807, 1625. New......$2.95

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2 MFD—5000VDC GE. New	$5.95
3 MFD—Sprague. 4000 V. New	5.95
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10 MFD—Fast, 600 V. New	1.49
2 MFD—Aerovox or Solar, 600 V. New ......3 for	.59
4 MFD GE. 600 V. DC. New	.97

ARR-2 RECEIVER

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11 Tube Superhet. Easily converts to 2 meters.

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. . . Changes any low impedance headset to high impedance. Very compact, has standard plug attached for insertion into a standard headphone jack in receiver. Jack on front of impedance matching box, accepts standard headset plug. Make use of your low impedance headsets. Get yours while quantity lasts.

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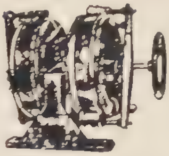

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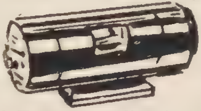

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Wincharger Dynamotor—12 V. input. output 440 V. DC @ 220 Ma. Brand New	$7.95
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GP-7 TRANSMITTER

100-watt master oscillator type. Can be used on any frequency from 350 to 9050 KC by using the proper plug-in tuning unit. Type 803 PA and built-in 400 cycle power supply using a pair of 1616 rectifiers. Three 2-inch panel meters: 0-300 MA DC, 0-9 RF Amps. 0-15 AC Volts. A gold mine of excellent usable components for building and serving any high wattage rig. Comes complete with one tuning unit and tubes.
Excellent condition **$9.95**

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105 to 9050 KC. Four Bands. Calibrated Dial, LF-Ship-BC—80 & 40 Meter—Complete with Tubes and Dynamotor. For 24 Volt operation; easily converted to 110 V—12 or 6 Volt. Size 8¼" x 7¼" x 15¼". Like New. With schematic. Weight 30 lbs. **$18.95**

BC-375 100 Watt TRANSMITTER—Voice CW—Freq. 200-500 KC., 1500-12500 KC. by use of plug in Tuning Units. Uses 1 10v & 4 VT-4C Tubes. Size: 23" L x 21" H. x 8" W. Complete with Tubes, less Tuning Units—Price . USED: **$15.95**

Tuning Units for BC 375 or 191 Trans.

	New
TU-7 4500-6200 kc	$2.29
TU-8 6200-7700 kc	2.29
TU-9 7700-10000 kc	2.29
TU-10 10000-12500 kc	2.29
TU-26 200-500 kc	2.29

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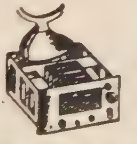
VARIABLE inductance Tuner with Calibrated Veneer Lock Dial. 100 Watt Cap. (shown upper right of BC-375 picture above). Size: 7½" x 3½". Rotary Ind. .... USED: $6.95

Broadcast Band and Aero MN-26C Installation



A 12 tube remote control manual direction finder desirable for commercial type navigation on boats and planes. Has a frequency range of 150 kc to 1500 kc in 3 bands. This frequency covers the beacon and standard broadcast bands. Operates on 28 V. DC input. Complete installation consists of:

MN-26C Receiver. Brand New	$9.95
MN-20E Rotable Loop	New 4.95
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WAEDC 1955

The First European (WAE) DX Contest

This year, the Deutsche Amateur Radio Club e. V., the sponsor of the well-known WAE Certificate, is establishing and directing the first European (WAE) DX contest. The object of this contest is to establish as many contacts as possible within the period of the contest between radio amateurs residing in Europe and amateurs located throughout the remainder of the world and to give all amateurs an increased possibility in obtaining the WAE. The contest will be divided into two periods, the first devoted to CW and the second to phone operation. The two phases of the contest will be held independently of each other on different dates, and entry may be made in either or both periods. A conscious effort has been made in the formulation of this contest to develop new aspects and possibilities of interest to the contest-minded radio amateur, and, therefore, the rules differ somewhat from those which have been generally used during the past few years.

Rules

§ 1 Contest Periods:

CW Portion: 0000 GMT 17 September to 2400 GMT 18 September 1955.

Phone Portion: 0000 GMT 24 September to 2400 GMT 25 September 1955.

(The duration of each contest period is 48 hours. Logs will be kept using GMT [Greenwich Mean Time] only.)

§ 2 Frequencies:

a. The following amateur bands are to be utilized during the contest: 3.5, 7, 14, 21 and 28 mc.

b. Contestants must observe the laws of their respective countries regarding the allocations of frequencies for CW and 'phone operation. Any violation of these laws will result in the automatic disqualification of the entry. European contestants must observe during the 'phone portion the Region 1 'phone bands of the IARU. Phone operation for these stations only from 3 600—3 800 kc, 7 050—7 150 kc, 14 125—14 350 kc, 21 150—21 450 kc and 28 200—29 700 kc.

c. Cross band operation is not permitted.

§ 3 Contest Communication and Scoring:

a. A valid QSO is one held between a European amateur and an amateur not located in Europe.

b. European and non-European stations will exchange a control number consisting of two parts. The first part is a numerical RST or RSM (or simply, RS) report, and the second part consists of a three digit figure representing the number of the QSO. Each station will number its QSO's chronologically starting with 001 and will continue them serially even though operation may be conducted on different bands.

c. Each station may be worked only once per band.

d. A confirmed (either by "OK" or "R") exchange o control numbers will count ONE POINT.

e. Unconfirmed or incompleted exchanges may be filled i by working the same station a second time.

f. Tone reports of T 7 or worse count ZERO POINTS

§ 4 Country Multiplier:

a. *COUNTRY MULTIPLIER FOR STATIONS OUTSIDE OF EUROPE:*

(1) Each European call area of the WAE-countries lis counts ONE COUNTRY POINT per band. The addition of all countries on all bands results in the multiplier. The WAE Country List of 1 Decembe 1951 in which Sicily (IT) will count as a separat country is valid.

(2) The following countries may be substituted for the indicated call areas of the USSR (for the purpose of ready identification, stations operating withi substitute countries will add a fraction bar (/) and the figure or letter noted below to their cal signs): See Fig. 1 below.

(Note: Although most West Berlin stations have a call sig commencing with "DL7", some stations with other DL pre fixes are now operating in Berlin. Furthermore, since som DL7's now reside in Western Germany, the only valid metho of recognizing a West Berlin station will be by the adde "/7".)

(3) Should amateur radio communications be officiall reestablished with all of the countries of the USS prior to 31 August 1955, the substitutions liste above will no longer apply.

(4) Recognition of other WAE Countries: It is sug gested that stations located on Jan Mayen an Svalbard (Spitzbergen) use "/J" and "/S" respec tively after their call signs for identification pur poses.

b. *COUNTRY MULTIPLIER FOR EUROPEAN STA TIONS:*

(1) The DXCC Country List of the ARRL is the basi for multipliers for European stations.

(2) For the purpose of the contest, the following countries may also count toward the country multi plier: Indochine (FI), Burma (XZ) an Thailand (HS).

W or K	(1 through 0)
VE	(1 through 8)
VO	
PY	(1 through 9)
CE	(1 through 7)
ZS	(1, 2, 4 through 6)
VK	(1 through 6)
ZL	(1 through 4)

GM	Shetlands		(add "/S")	substitutes for UA Franz-Josef-Land
LA	Norway	north of	(add "N/")	substitutes for UB Ukranian Republic
OH9	Finland	the polar	(add "N/")	substitutes for UC White Russia
SM2	Sweden	circle	(add "N/")	substitutes for UN Karelia
GM	Orkneys and Hebrides		(add "/O")	substitutes for UO Moldavia Republic
OZ	Bornholm Isl.		(add "/B")	substitutes for UQ Latvian Republic
DL7	West-Berlin		(add "/7")	substitutes for UR Estonian Republic
DM	East Zone of Germany (DDR)		(no add. needed)	substitutes for UA 1/2/3/6
SM1	Gotland		(no add. needed)	substitutes for UP Lithuanian Republic

Fig. 1. Substitute Country List for USSR Call Areas.

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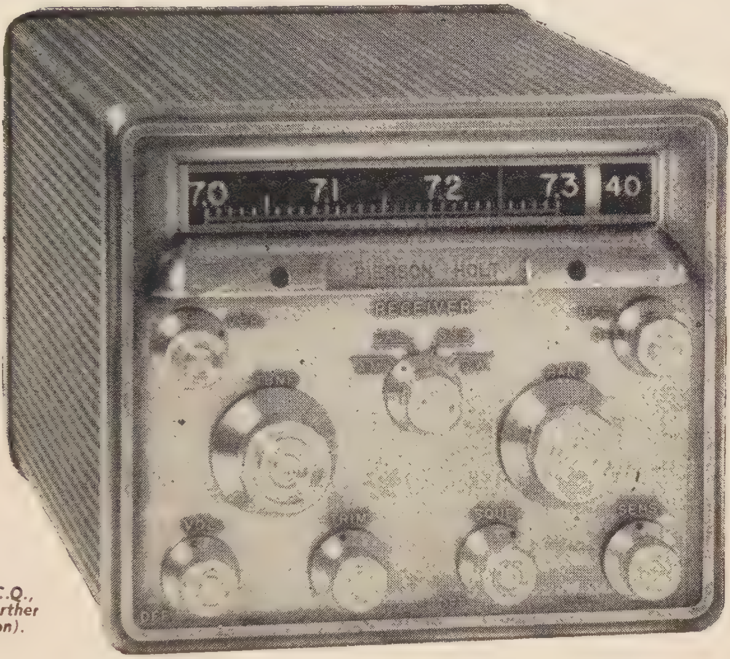
MOBILE PERFORMANCE AT ITS BEST



(See May C.Q., write for further information).

- ★ Seven Band Turret, 10 Mtrs. thru Broadcast.
- ★ Dual conversion, crystal controlled.
- ★ Dial displays only the band in use.
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- ★ Ham bands spread over full dial.
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- ★ Advanced engineering, superb performance, a quality product throughout.

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(3) Each of the DXCC countries including the abovementioned districts counts ONE COUNTRY POINT per band in the calculation of the multiplier. The addition of all countries on all bands results in the multiplier.

§ 5 Message Handling — QTC Traffic:

In order to stimulate versatility and quick reaction among the contestants, an additional phase is being introduced in the WAEDC. Upon a voluntary basis, the individual contestant may expand his contest activity beyond the minimum control number exchange by engaging in the exchange of simple messages, i.e. QTC traffic. According to the scoring system outlined below, QTC traffic can result in a considerable overall gain in points.

a. *DESCRIPTION OF A QTC:*
  - (1) A QTC is a report of a confirmed QSO which has taken place between a European and non-European station during the period of the contest.
  - (2) A QTC can be transmitted only from a non-European country to a European country.
  - (3) A QSO reported in one confirmed QTC may not be transmitted in a later QTC to another station nor may an identical QTC be transmitted to the same station on different bands. Therefore, the more QSO's which have taken place (i. e. normal exchange of control numbers), the more possibility there is for QTC traffic.

b. *CONTENTS OF A QTC:*
  - (1) A QTC contains the time, call sign and the QSO number.
  - (2) Example: 1200/G 6 ZO/113. This signifies that the non-European station originating the QTC had had a QSO at 1200 GMT with G 6 ZO and G 6 ZO had indicated that this was his 113th QSO during the contest.
  - (3) A report of a QSO with a certain station on one band can not be reported back to that same station on a different band as a part of a QTC.

c. *QTC SERIES:*
  - (1) A maximum of ten (10) QTC's per station per band may be transmitted by any non-European station. Since only one contact per station per band is permitted, it means that both the exchange of a conrol number and QTC's (if the latter is desired) must be accomplished in one QSO.

d. *NUMBERING OF QTC SERIES:*
  - (1) To afford a continuing monitor of QTC traffic and to prevent sending a report of the same QSO twice, a uniform numbering sytem has been instituted.
  - (2) Example: QTC 8/10. This designation means that this is the eighth series of QTC's that the originator has sent since the beginning of the contest and that the present series contains ten QTC's.
  - (3) Normal message procedure will be used, but the numerical designation of a series of QTC's may also be transmitted at the end of the series of QTC's. Acknowledged receipt by the European station of a QTC series is by transmitting the numerical designation and an "OK" or "R." (Example: QTC 8/10 OK).

e. *REPEATS OF QTC SERIES OR PARTS THEREOF:*
  - (1) In case a station misses an entire QTC series, contact may be reestablished a second time in the same band without, however, exchanging another control number.
  - (2) A portion of a QTC or QTC series may be repeated once per band.
  - (3) If a QTC series or a portion thereof is not acknowledged received by a European station, this series or the non-acknowledged portion thereof may be used by the non-European station in another QSO.

f. *QTC TRAFFIC SCORING:*
  Each QTC, transmitted or received, counts ONE POINT.

§ 6 Bonus Points and Final Scoring:

a. BONUS POINTS: Each station contacted during the WAEDC on three different bands counts ONE BONUS POINT, a station contacted on four bands counts TWO BONUS POINTS, and a station contacted on all five bands counts THREE BONUS POINTS

b. FINAL SCORE: The QSO points added to the QTC an bonus points is multiplied by the multiplier to gi the final score.

§ 7 Entry Classifications:

a. For the purposes of awards, single operator stations an multi-operator stations are considered in separate cat gories. An amateur assisted in any way (such as having assistance in preparing his log or handling an part of his transmitting equipment) must file his entr as a multi-operator station.

b. Club stations are considered to compete in the mult operator class.

§ 8 Designation or Classification of Win ners:

No individual will be designated as world-wide winne Awards will be given to the person(s) placing highe in his (their) country or district. A further classifica tion will be made (when applicable) as follows *Class "A":* Those amateurs who operated on only on or two bands for the entire period of the contest an *Class "B":* Those amateurs who operated on three o more bands.

§ 9 Contest Awards:

Certificates will be awarded to amateurs attaining th highest score in each country and in each of the ca districts mentioned above. In case of sufficient participa tion, second and third place awards will also be con sidered.

§ 10 WAE Endorsements:

Depending upon whether it is possible to cross chec reports of QSO's from logs which have been submitte in connection with the WAEDC, endorsements for the WAE Certificate will also be considered upon request

§ 11 Contest Calls:

Stations outside of Europe will call simply *"CQ WAE de XYZ"* or *"TEST WAE de XYZ"*, or even more simply *"WAE WAE de XYZ"*. European stations wil call during the WAEDC *"Test DX de ZYX"*.

§ 12 Reporting:

It is suggested that only the log sheets of the DARC be used. They will be sent to contestants upon receipt of 1 IRC (air mail 2 IRC's) and are available immediately Indicate the number of sheets needed. Contest reports must be mailed not later than 20 November 1955, decisive date being the postmark.

§ 13 The decisions of the contest committee are final.

WAE Country List of 1 December 1951:

CT 1 — CT 2 — DL/DJ — EA — EA 6 — EI — F — FC Corsica — G — GC — GD — GI — GM — GW — HA — HB — HE — HV — I — IS — IT — M 1/9 A — I Trieste — LA — LB Jan Mayen — LB Svalbard (Spitzbergen) — LX — LZ — OE — OH — OK — ON — OY — OZ — SM — SP — SV 1/0 — SV 5 Rhodos — SV 6/9 Crete — TA European part — TF — YO — YU — ZA — ZB 1— ZB 2 — 3 A — PX/7 B — 9 S — (only for the duration of the WAEDC, the Aaland Islands — OH 0 — count as a substitute for the Pelagic Islands).

SUBSTITUTE COUNTRY LIST FOR THE USSR: (see § 4 a [3])

DM — GM/S — LA/N — OH 9/N — SM 2/N — GM/O — OZ/B — DL 7/7 — SM 1.

CW September 17-18

PHONE September 24-25

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No. V-102B: 1 to 500 watts input. Price............................**$14.95**
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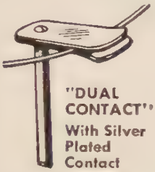

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With Silver Plated Contact Fingers

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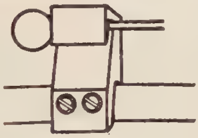
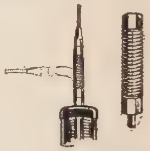


Fastens whip down to car roof level for storage, heavy wooded areas, etc. Securely fastens to roof water drain of any make car without damage to paint or metal. Brass—chrome plated.

No. V-109. Price. **$1.79**

"ORIGINAL" WHIP FLEXOR



Serves a Dual Purpose: 1—Eliminates a base section spring to help prevent bad QSB on the receiver end. **2**—Keeps whip perpendicular at extremely high speeds while allowing whip to be brought down into horizontal plane for garage storage, etc. Will fit all standard ⅜" fittings.

STANDARD MODEL: **No. V-110S.** Price........ **$1.95**
DE LUXE HEAVY DUTY MODEL: **No. V-110D.** Price.................................. **$3.95**

VAARO FIBREGLAS ANTENNA WHIPS

Fibreglas ideally takes road shocks and constant whipping. Ours possesses remarkable resilience—with no danger of taking permanent bend. Light in weight to impose least strain on mounts. All ⅜" SAE threaded studs. **No. V-101—6'**: Price **$8.50. V-101—7'**: Price **$8.75. V-101—8'**: Price **$8.95.**

VAARO BASE SECTIONS

⅝" dia. stock. Flash coppered-nickel plated and chrome plated. Threaded studs, ⅜" SAE, each end fit all standard antennas. **No. V-104—12"**: Price **$3.75. No. V-104—24"**: Price **$3.95. No. V-104—36"**: Price **$4.95.**

VAARO BODY MOUNT

For flat surface mounting, directly on car body. For contour mounting swivel is available. With standard ⅜" fitting. Chrome plated with stainless steel fittings. Insulator is finest grade double X Bakelite. **No. V-111.** Price.. **$4.25.**

"ORIGINAL" KWIK-ON ANTENNA CONNECTOR—Stainless Steel

PROTECT YOUR ANTENNA AND COIL AGAINST THEFT. INSTALL OR REMOVE THEM IN LESS THAN 5 SECONDS. "Just a push and a twist" and you connect or disconnect. No tools required, once installed. Fits all standard whip antennas, antenna loading coils and mast sections. Use **one** KWIK-ON for whip only. Use TWO to store both antenna and coil in trunk when parked or in private or public garage. Your XYL can remove when she is driving. KWIK-ON is noise free. Has positive electrical connection. Will not rust. *Pat. Applied For.*

AMATEUR NET— $3.95. MAST SECTIONS with KWIK-ON permanently attached: **No. KO-24C**—24"—**$5.95. No. KO-30C — 36" — $6.45.** Both with chrome plated mast section.

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Examples on How to Keep Logs:

Log at a non-European station (for example, W 8 PQQ):

GMT	CALL	MC	SENT	RCVD	QTC group	QTC sent to
0001	EA 1 AB	14	579001	589001	1	
0004	LA 4 ZC	14	569002	579004	1	
0007	OH 2 YV	14	569003	569007	1	
0009	PA Ø GN	14	579004	589005	1	
0012	I 1 ALU	14	589005	579008	1	1
0015	GM 2 FHH	14	569006	569006	2	
0020	F 3 MS	14	559007	579009	2	
0025	HB 9 X	14	579008	579011	2	
0030	HB 9 X	7	569009	559012	2	
0032	OZ 7 BO	7	579010	569010	2	
0038	CT 2 BO	7	569011	589008	2	
0040	OK 1 HI	7	579012	579010		
0042	F 9 QV/FC	7	569013	569014	2	
0046	SM 5 AQW	7	579014	589018	2	
0051	F 3 MS	7	569015	559016	2	
0057	OK 1 HI	14	579016	589013		2
. . .	. . .	. . .	. . .	. . .		

W 8 PQQ decided on sending a QTC at 0015 right after his exchange of figure groups with GM 2 FHH. It was his first QTC containing five return reports. Thus, he sent the following text:—QTC 1/5 — 0001/EA 1 AB/001 — 0004/LA 4 ZC/004 — 0007/OH 2 YV/007 — 0009/PA Ø GN/005 — 0012/I 1 ALU/008 —. The combination of the first QTC series of W 8 PQQ is shown in the column called *QTC group*. In the column *QTC sent to* it can be recognized that the receiver of the serial number 1 is GM 2 FHH.

Suppose that W 8 PQQ would now try to figure out his final score, he would have to count the following way: 1 QSO's plus 5 QTC's plus 9 QTC's = 30 points times 1 countries = 480. Thus, the final score would read 480 points

Log at a European Station (for example, GM 2 FHH):

See Fig. 2 below.

The reception of the QTC is to be entered line for line i the example above. The QTC-series number and the amoun of QTC's being received is to be shown in the QTC column

An intermediate score of GM 2 FHH would result out o the following calculation:

6 QSO's plus 5 QTC's = 11 points times 6 countrie = 66 points final score.

Remarks: These two examples indicate typical entries in the contest logs of two stations.

Special log sheets for the WAEDC have been prepared b the DARC, and it is strongly recommended that these sheets be used by all contestants. They have been carefully prepared to ease the task of recording contest results and through their use, the necessary calculation of points and the final score is simplified. It should be noted that the results of activity on *different bands* must be submitted to the DARC on *separate log sheets,* one log record for each band of operation. The *reverse side* of the individual log sheets should *not be used.*

Also available from the DARC are special total sheets which may be used to record the results (points and multipliers) from the log sheets of the separate bands and for the compilation of the final score.

HOPING THAT YOU WILL TAKE PART AND MAKE THIS CONTEST THE BEST EVER, WE WISH YOU LOTS OF SUCCESS AND GOOD CONDITIONS,

The Contest Committee of the DARC
DL 7 AA — DL 7 EN — DL 7 CW

Address: DARC — DX-Bureau, Fuchsienweg 51, Berlin
Rudow, Germany.

GMT		CALL		MC	NR	NR/QTC	QTC	
QSO	QTC	QSO	QTC		SENT	RCVD	GROUP	NUMBER
0002		W 1 HA		14	589001	579001		
0004		VO 6 U		14	569002	569001		
0006		KP 4 CC		14	579003	579002		
0008		VP 9 BL		14	569004	579003		
0011		W Ø UNZ		14	569005	569002		
0015		W 8 PQQ		14	579006	569006	QTC 1/5	
	0001		EA 1 AB			001		
	0004		LA 4 ZC			004		
	0007		OH 2 YV			007		
	0009		PA Ø GN			005		
	0012		I 1 ALU			008		5
. . .		. . .		. . .	. . .	. . .		

Fig. 2. Sample European Log.

RTTY

[*Continued from page* 61]

Here is what they told me:

Mackay Radio. The greater part of their point-to-point radio circuits are teleprinter, using FSK with frequency and time division multiplexing. None of their circuits in the Pacific area use Morse. Only a relatively few, unimportant, small circuits use Morse, and those use Creed machines.

Press Wireless. Almost 100% of their circuits are radioteletype. Through the years since World War II there has been a gradual transition from Morse to RTTY. The only completely Morse circuits remaining are to Prague and to Cuba. Some mixed circuits, Morse one way and RTTY the other, to South America exist, but they are in the process of changing over to radioteletype too.

Now, Mr. Sweger, don't get the idea that we fellows on RTTY dislike CW. Internationa Morse code is still, and will remain, a very important part of radio, and that goes for commercial, military, and ham radio. Both Morse and RTTY have a place in hamming, along with SSB and FAX. There is room enough for everyone.

Keep the news coming, fellows. Remember this is your column. What appears in it in the future will be up to you. Without your letters there just isn't an *Amateur Teletype* column. Also, you fellows with a special project cooking, write it up, will you? Let *CQ* publish it as a technical article. Don't forget, *CQ* pays fo these. We know that several of you are working on converters for 170-cycle shift. It sure woul be nice to see an article on such a converte appear in *CQ* in time with the green light from the FCC on narrow shift.

For further information on the preparatio of manuscripts see, "Author! Author!" in *CQ* October, 1952, page 13.

NEW MULTIPHASE "Q" MULTIPLIER

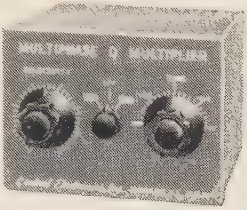
- Peaks Desired Fone or CW Signal
- Nulls Out Interfering Carrier up to 50 DB. No Loss in Speech Intelligibility
- No Insertion Loss — New Two Tube Circuit
- Special High "Q" Pot Core Inductor

MODEL AQ

CONVERTS MODEL A SLICER

Plugs into Model A accessory socket, converting it into a Model B. New front panel and controls provided. Enjoy all the advantages of "Q" Multiplier selectivity on CW, AM & SSB with your present Model A Slicer.

Wired	$29.50
Kit	$22.50

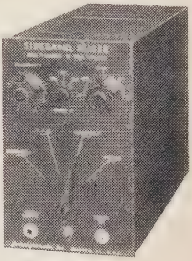


MODEL DQ

FOR AM, CW, SSB OPS

Desk Model "Q" Multiplier for use with any receiver having 450 to 500 KC IF. In attractive, compact case with connecting power-IF cable. Power supplied by receiver. Also provides added selectivity and BFO for mobile SSB or CW reception.

Wired	$29.50
Kit	$22.50



MODEL B SLICER

BUILT-IN "Q" MULTIPLIER

Upper or lower sideband reception of SSB, AM, PM & CW. For use with any receiver having 450-500 KC IF.

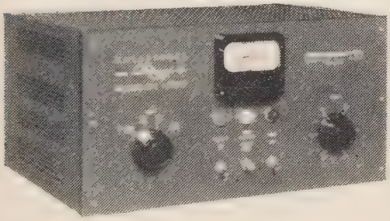
Wired	$99.50
Kit	$69.50

MODEL A SLICER

Same as Model B but less "Q" Multiplier

Wired	$74.50
Kit	$49.50

A NEW CONCEPT IN LINEARS



MULTIPHASE 600L

BROAD BAND LINEAR AMPLIFIER

NO TUNING CONTROLS!

SINGLE KNOB BANDSWITCHING 10-160 METERS

- Single 813 in Class AB_2. Approx. 2 watts effective or 4 watts peak drive for 500 watts DC input.
- New band-pass couplers provide high linear efficiency: 60-65%.
- Designed for 50-70 ohm coaxial input and output.
- Built-in power supply. Bias and screen regulation. Automatic relay protection.
- Exclusive metering circuit reads grid current, watts input, RF output, reflected power from mismatched load — switch to any position while on the air!
- Completely shielded — TVI suppressed. Free of parasitics! Low intermodulation distortion.
- Choice of grey table model (17⅝"W, 8¾"H, 13"D) or grey or black rack model.

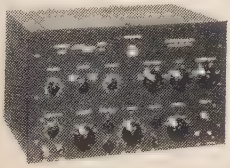
Wired, with tubes $349.50

MULTIPHASE EXCITERS

Check These Features

NOW IN BOTH MODELS

- Perfected Voice-Controlled Break-in on SSB, AM, PM.
- Upper or Lower Sideband at the flip of a switch, with 40 DB. suppression.
- New Carrier Level Control. Insert any amount of carrier without disturbing carrier suppression adjustments.
- Talk yourself on frequency.
- Calibrate signal level adjustable from zero to full output.
- New AF Input Jack. For oscillator or phone patch.
- CW Break-in Operation.
- Accessory Power Socket.

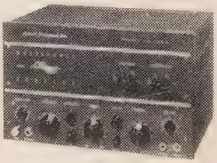


MODEL 20A

- **20 Watts P.E.P. Output SSB, AM, PM and CW**
- **Bandswitched 160 — 10 Meters**
- **Magic Eye Carrier Null and Peak Modulation Indicator**

Choice of grey table model, grey or black wrinkle finish rack model.

Wired and tested	$249.50
Complete kit	$199.50



MODEL 10B

- **10 Watts P.E.P. Output SSB, AM, PM and CW.**
- **Multiband Operation using plug-in coils.**

Choice of grey table model, grey or black wrinkle finish rack model. With coils for one band.

Wired and tested	$179.50
Complete kit	$129.50

MULTIPHASE EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave. Chicago 13, Illinois

WRITE FOR LITERATURE ON THE COMPLETE MULTIPHASE LINE

NOVICE

for the novice and technician

Reported by

Walt Burdine, W8ZCV
RFD 2, Waynesville, Ohio

Dear Readers of The Novice Shack:

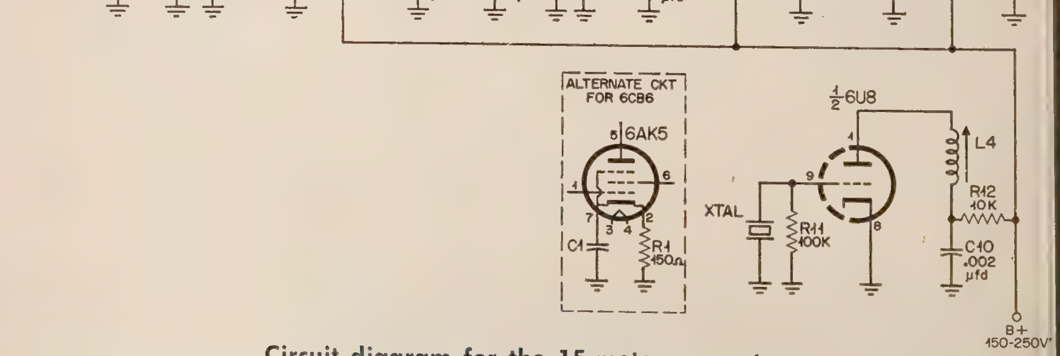
I am still writing this column blind as I haven't had time yet to receive many reactions to the first one, but quite a few ideas are beginning to materialize in my mind? here. I have had some criticism to aid me in writing the material for this column. I find that while some people do not like to see their names in print, others are very anxious to see their names in print. Henceforth names and doings of Novices or friends who write in will appear in Novice Shack. Remember, this is YOUR column,—use it. I was talking on this subject to a friend of mine, an Indiana poet, and he gave me some good advice, "Tread lightly dear friend, or you will find how weak the golden threads from which the cloth of friend-ship is woven." If I have said anything in this column you didn't like, I apologize. If I missed you, I apologize. If I miss you from now on, you apologize. I wish to express my thanks to all you nice folks on the air and t those who have written wishing me good luc on my new venture. I'll try to do the job we enough to merit them. I cannot answer all letter but will answer those requiring a direct answe I must have your letters, pictures hints and kink to make YOUR column what you want it to b

Novices, Young and Old

For my records and to be used when I occa sionally have to talk before clubs, I would lik to know who is the oldest novice and the younges novice in our midst. If you are in either of thes groups will you please write a post card or lette and tell me of your age and novice experience Thank you.

15-Meter Converter

The converter described here is simple to buil and does a good job on almost any receiver. I



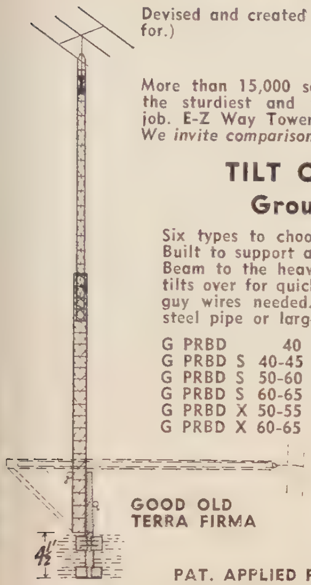
Circuit diagram for the 15-meter converter.

The Original TILT OVER TOWERS

Devised and created by E-Z Way over 5 years ago. Often copied but never equaled. (Patent applied for.)

TESTED AND PROVEN

More than 15,000 satisfied users. "Ask the Ham who owns one." (Courtesy, Packard) We make the sturdiest and most versatile towers in the industry. Don't send a boy to do a man's job. E-Z Way Towers are *designed* to support Rotary Beams—not just a lightweight TV antenna. *We invite comparison.*



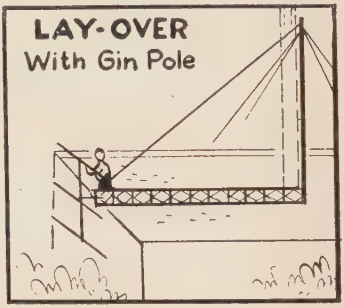
PAT. APPLIED FOR

TILT OVER with Ground Post

Six types to choose from—40 to 65 ft. Built to support anything from a Minnie Beam to the heaviest. Cranks down and tilts over for quick, easy adjustment. No guy wires needed. Ground post is 3½" steel pipe or larger.

G PRBD	40	$120
G PRBD S	40-45	$160
G PRBD S	50-60	$210
G PRBD S	60-65	$260
G PRBD X	50-55	$325
G PRBD X	60-65	$385

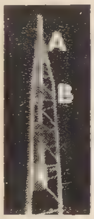
LAY-OVER With Gin Pole



Three types to choose from — 40 to 60 ft. Ideal one-man installation for flat roofs or porches. Cranks up and down and lays over for easy antenna adjustment. No guy wires needed. Tower is locked in a V-bracket at top of gin pole.

GIN-RBD 40	$125
GIN-RBD 40-50	$165
GIN-RBD 50-60	$215

We pay freight charges on any towers shipped in U.S. Add 10% to prices shown for West Coast orders. All E-Z Way Towers have heavy dip-coated Goodyear Pliolite S-5 (rubber base aluminum enamel). Hot dipped galvanized available at extra charge. Lightest cables used on our Ham towers is 2000 lbs. test—most cables used are 2600 lb. test.

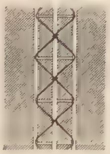


Provisions to mount rotor inside top of tower. Bearing at A and B relieves all strain from rotor.

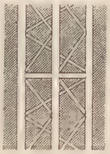
BUILD IT YOURSELF

Go as high as you like with 20 ft. sections. 320 ft.?

C-10



C-15



C-25

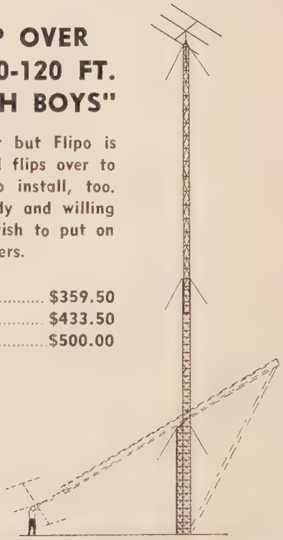
C-10	C-15	C-25
Width 10"	Width 14"	Width 25"
Max. Ht. 120 ft.	Max. Ht. 200 ft.	Max. Ht. 320 Ft.
Guy Sp'g 27 ft.	Guy Sp'g 40 ft.	Guy Sp'g 60 ft.
W. p. ft. 4½ lb.	W. p. ft. 8 lbs.	W. p. ft. 20 lbs.
Price (approx.) $2 per ft.	Price (approx.) $3.50 per ft.	Price (approx.) $9 per ft.

Used extensively for VHF and UHF communication antennas. Two other sizes available. When maximum height and guy spacing is not exceeded, these towers will withstand a 60 lb. wind load.

FLIP OVER 80-100-120 FT. "FOR THE HIGH BOYS"

Gets you up in the air but Flipo is easily cranked down and flips over to adjust antenna. Easy to install, too. A real sturdy brute ready and willing to carry any load you wish to put on it. One of our finest towers.

FOX 80	$359.50
FOX 100	$433.50
FOX 120	$500.00



WRITE FOR CATALOG

When writing, please specify type of tower in which you are interested, height and expected antenna load. This information is necessary to give you accurate advice.

E-Z WAY TOWERS INC.

5901 E. BROADWAY
P. O. BOX 5491
PHONE 4-3916
TAMPA, FLORIDA

was designed to get you going on 15 meters. The unit was built on a 7x7x2 inch aluminum chassis complete with power supply. This unit then powers a 6-meter and a 10-meter converter each of which are built on 5x7x2 aluminum chassis, which in turn are mounted behind a 5¼ x 19 inch panel. The performance of this unit ahead of the popular BC-455-B exceeds that of a receiver in the 400-dollar class on the 15-meter band.

This unit is simple enough to be built by a novice if he has proper tools and access to a good grid dip meter.

The oscillator frequency determines the Intermediate Frequency, and uses an overtone crystal. A 20-megacycle crystal may be used so that the I.F. will be 1000 to 1450 kilocycles for tuning the fifteen meter band in on a broadcast receiver. A 15 Mc crystal may be used and then the I.F. will be 6.000 to 6.450 Mc, so the popular BC-455 can be used as the companion receiver. The coil L4 must be tuned for maximum output at the crystal frequency.

The coil data was that used here and may require a little pruning to hit the exact frequency range.

An alternate circuit is shown for the use of the popular war-surplus 6AK5 tube. No special shielding was found to be necessary in two models built by the writer.

GETTING ON THE AIR (Cont'd)

Continuing the discussion of choosing the proper band and other subjects as started last month we will pick up where we left off.

Power

There are still portions of the world where the high lines have not been built and the problems of obtaining power in these localities are many. Batteries used for power have to be charged either with waterpower, windpower or gasoline-engine driven generators. This method of providing power

New General, Paul Neveu, W1CKA, 152 Arlington Street, Bristol, Connecticut. Paul says he's after that elusive 20 meter DX.

is commonly used in field day operation. Dry b
teries can be used for emergency equipment
even then there is usually a provision made to
a vibrator power supply and a storage battery
prolong the life of the battery supply. If you ha
the familiar a-c lines, the problem of power
pends a good deal on your financial condition a
the space in your living quarters. There is usua
a compromise on these two factors.

The power supply for the ham transmitter co
a good portion of the total cost of the new tra
mitter. This should be made on a separate chas
so that it can be used for other equipment as w
The first CW transmitter should be built so t
it can be used to drive an r-f amplifier stage wh
the general comes from the FCC. The prope
designed low-frequency transmitter can be us
on all novice frequencies except the two me

The Lakeside Short Wave Listening Club, 5816 Lakeside Avenue, Richmond 28, Virginia, was formed to help the members get their ham licenses. Kneeling L. to R. are Penn Goggen, Lester O'berg, Larry Zinski and Bobby Cummings. Standing are Charles Brown, Gene Payne, KN4CQK, David Woodson (Pres.), Julian Woodson, Carl Jarves, KN4DIF, V.P. and Calvin "Skip" Wilson, KN4DHS (secy. and treas.).

Leo. I. Meyerson
W0GFQ

Use This Checklist . . .

FOR COMPLETE INFORMATION ON THE *Best Buys*

FROM

the World's Most Personalized Radio Supply House !

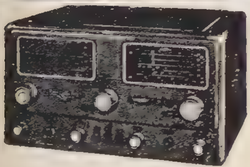
The NC-98
ONLY $8.19
per month
Pay Just $15.00 Down

Top-notch value! Now, for the first time, a crystal filter, an S-meter, electrical bandspread, a large, easy-to-read slide rule dial, an RF stage and 2 IF stages — only a few of its many fine features.

National

CASH PRICE: $149.95

National



CASH PRICE: $119.95

The NC-88
ONLY $9.54
per month
Pay Just $12.00 Down

Built-in speaker, advanced AC superhet circuit, tuned RF stage, 2 IF stages, 2 hi-fi audio stages with phono input. Separate bi-frequency oscillator. Many, many other features. Ask us for complete specs.

The NC-183D
ONLY $21.78
per month
Pay Just $39.95 Down

Designed for maximum sensitivity and selectivity. Dual conversion added to IF system with 1720 kc. first conversion frequency. Special push-pull, high fidelity audio system incorporated. Includes all time-tested features of the NC line.

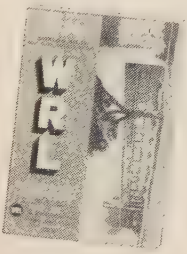
National

CASH PRICE: $399.50

SPEAKER NC-183TS . . . $16.00

We Stock the Complete Line of Famous National Receivers. Write for Detailed Information Today.

FREE **NEW 1956 CATALOG**



Tells the Complete Story On Over 15,000 Items of Top-Notch Equipment for the Amateur, Serviceman, Experimenter, Industrialist and Hi-Fi Enthusiast.

All Prices Subject To Change Without Notice!

Rush me the Following Information Immediately. Also Quote me the Trade-In Value On Your:

____
(WRL Eqpt. Desired)

For My: ______________________________
(Present Equipment)

☐	I want full information on National's NC-98.
☐	I'm interested in the NC-88.
☐	Send Details on the NC-183D.
☐	I'd like a copy of your 1955 catalog Send me your latest free list of reconditioned equipment with the 90 day factory new guarantee. I'm interested in saving up to 50%.
☐	I'd like your giant size (3'x4') wall type radio map of the U.S.A. I'm enclosing 25c in cash.
☐	Send full details on your 65 watt, completely bandswitching Globe Scout Transmitter.
☐	Send full details on your 500 watt completely bandswitching Globe King Transmitter.
☐	Tell me about your E-Z Pay Plan where I need only 10% down on any equipment I wish to buy.
☐	I'm interested in your Novice Kits. Please forward all details.
☐	Include info on the National HRO-60.
☐	Include info on National's SW-54.
☐	Include info on the NC-125.

Name: ______________________________

Address: ______________________________

City and State: ______________________________

WORLD'S MOST PERSONALIZED RADIO SUPPLY HOUSE

World Radio LABORATORIES

3415 W. BROADWAY, CO. BLUFFS, IA., Phone 2-0277 band. The two meter phone transmitter is considerably more complex to build and entails quite a bit of technical ingenuity to get it operating properly. The cost of building a two meter phone transmitter is not excessive but it will cost more than a low-frequency CW station. Phone operation requires the purchase of a microphone and the addition of a modulator plus the power to power the modulator. The power of the modulator is one half the r-f power for one hundred percent modulation. A converter is required to enable the present receiver to tune the higher frequencies. The converter can be built by a ham with a fair amount of technical ability at a cost governed by the complexity of the circuit chosen. Good converters can be bought at prices ranging from thirteen to fifty dollars without accessories or power supply. The converter needs a power supply to furnish the necessary filament and high voltage power. Sometimes the power is taken from the existing receiver, but this usually taxes the receiver power supply.

Costs

The cost of putting a simple station on the air isn't much more than the cost of buying cigarettes for yourself for two years. By using your ingenuity you can put a fairly good station on the air for about one hundred dollars or less. A good deal of your success depends upon your operating ability and the correct use of the available bands.

Getting started on the lower frequency bands costs less than on the higher bands. Most receivers used by hams cover all bands up to 30 megacycles or more. Even broadcast receivers having the shortwave bands can be used by adding a beat frequency oscillator and a bandspread syste Some all-wave radios make excellent ham ba receivers, if properly adjusted and operated. Co verters can be used to extend the tuning range any receiver and a b.f.o. can be built for abo five dollars. The small 274N receivers can ve well be used and they can be bought for five d lars up. They have a good b.f.o. Their tuni range can be extended by the use of a convert The use of a converter increases their sensitiv and selectivity considerably. A simple convert for the 15 meter band is shown in this issue. Th converter can be built for about twenty dollars a can be used with most any receiver. Decide your band and *let's get going.*

Letters to the Editor

To Mike Mitchell, (13) **KN4CHK**, Box 28, Simpsc ville, Kentucky, goes the credit for being the first nov to write a letter addressed to me. Mike says: After month of testing and reassembling my equipment, 6V6 running about 14 watts and an S-40-B, plus ere ing a new antenna and then buying a new transmitt (whew!) this 13 year old lad proceeded to make wi the QRM. 80 QSOs in two weeks and 23 states b would still be happy to sked WN or KN 1, 5, 6, 7 a 0 plus any one needing Kentucky for WAS. My fr quency is 7176 kc. I will answer all letters. 73. Mik P.S. How about a QSL of the month contest? (E note: Novice cards are eligible in the regular month QSL contest.)

Bill Brandenstein, **K2JKC**, 132 Cedar Avenue, Woo lynne, New Jersey. Dear Walt: I have been readi the Novice Shack and haven't seen much action in from out Jersey way, so I thought I would write in a have a letter in from here. I am 16 and a junior high school. I have a Heathkit AT-1 transmitter a the antenna is a folded dipole. I have worked 46 stat and would like a sked with hams from Washingto

On June 18, Joan Simon WN8WPZ, and John (Bill) Schwedt, WN8UET stepped before a minister and agreed to use the same rig. Robert Simon, W8QLO is the bride's father. Best man was Fred Blinkhorn, WN8TBG. Bill and Joan will live at 15123 Rosemont Blvd., Detroit, Michigan.

FT-243 NOVICE CRYSTALS New E-x-t-e-n-d-e-d Frequencies

80 METERS	40 METERS E-X-T-E-N-D-E-D	DOUBLING TO 40 METERS E-X-T-E-N-D-E-D	Each	Lots of 10 or more. Each
3701, 3702, 3703 through 3748 in steps of 1 KC.	7151, 7152, 7153 through 7199 in steps of 1 KC.	3576, 3577, 3578 through 3599 in steps of 1 KC.	$1.25	99c

Your Choice of Frequencies! Same Day Shipment! Satisfaction Guaranteed!

CRYSTAL PACKAGE DEALS!

START YOUR OWN CRYSTAL BANK! BUY IN QUANTITY AT QUANTITY PRICES! MAKE AND KEEP SENSATIONAL SAVINGS!

PACKAGE NO. 1. 100 crystals. Consists of 80 FT-243, 10 FT-171 and 10 DC-34-35. Ship. wt. 6 lbs. Add shipping costs...... **$9.95**

PACKAGE NO. 2. 5 choice crystals. Zenith Model DC-18-A; SR 5 Bliley, 10,000 KC.; FT-243, 5000 Kc.; FT-241, 200 Kc.; FT-241, 500 KC. POSTPAID **$8.95**

PACKAGE NO. 3. 36 FT-241 Low Frequency Crystals. FOR SINGLE SIDE BAND. POSTPAID **$3.95**

PACKAGE NO. 4. ALL CRYSTALS IN PACKAGES 1, 2, and 3 ABOVE. POSTPAID **$19.95**

PACKAGE NO. 5. 22 FT 241 Crystals. SINGLE SIDE BAND LATTICE FILTER PACKAGE including two 455 Kc. IF Transformers. POSTPAID **$9.95**

PACKAGE NO. 6. 80 FT-241 Low Frequency Crystals. FOR SINGLE SIDE BAND. POSTPAID **$14.95**

PACKAGE NO. 7. 120 FT-243 Crystals with storage box. Ship. wt. 9 lbs. Add shipping costs.............. **$24.95**

PACKAGE NO. 8. 120 FT-243 Crystals. Different frequencies from Package No. 7. With storage box. Wt. 9 lbs. Add shipping costs.. **$24.95**

PACKAGE NO. 9. 240 FT-243 Crystals. (Package No. 7 PLUS Package No. 8.) With 2 storage boxes. Wt. 18 lbs. Add shipping costs **$39.95**

PACKAGE NO. 10. 483 Crystals. (Consists of Packages No. 1, 2, 3, 5, 6, 7, 8.) Wt. 30 lbs. Add shipping costs......... **$89.50**

For Full Information About Above Packages Deals & Lists of Frequencies—See Our Ads in June & July/55 Issue of Radio TV News and C.Q. Magazine.

SEND FOR FREE FLYER!
Gives complete listing of crystal frequencies.

MISCELLANEOUS AND SHIP BAND FREQUENCIES

2009 KC. DC-34........	2.99
2110 KC. DC-34........	2.99
2126 KC. DC-34........	2.99
2142 KC. DC-34........	2.99
2166 KC. DC-34........	2.99
2174 KC. DC-34........	2.99
2182 KC. DC-34........	2.99
2182 KC. FT-243.......	2.99
2206 KC. DC-34........	2.99
2406 KC. FT-243 & DC-34	2.99
2500 KC. FT-243.......	1.99
2559 KC. DC-34........	2.99
2567 KC. FT-243 & DC-34	2.99
2629 KC. DC-34........	2.99
2632 KC. FT-243.......	2.99
2637 KC. DC-34........	2.99
2637 KC. FT-243.......	2.99
2638 KC. DC-34........	2.99
2638 KC. FT-243.......	2.99
2670 KC. FT-243.......	2.99
2647 KC. FT-243.......	2.99
2670 KC. DC-34........	2.99
2738 KC. Type DC-34...	2.99
2738 KC. FT-243.......	2.99
2738 KC. MC-7.........	2.99
2891 KC. DC-34........	2.99
2907 KC. DC-34........	2.99
2951 KC. DC-34........	2.99
2973 KC. DC-34........	2.99
2977 KC. DC-34........	2.99
2983 KC. DC-34........	2.99
3000 KC. FT-243.......	1.99
3021 KC. DC-34........	2.99
3023 KC. DC-34........	2.99
3043 KC. DC-34........	2.99
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463 464 465
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470 472 473
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477 479 480

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2300 2305 2320 2350 2355 2360 2365 2370 2375 2390 2415 2430 2435 2440 2442 2450 2455 2460 2465 2470 2475 2480 2485 2490 2495 2505
2510 2515 2520 2525 2530 2535 2545 2550 2557 2560 2565 2570 2575 2580 2585 2590 2595 2650 2655 2660 2665 2680 2685 2690 2695 2705
2710 2715 2720 2750 2755 2760 2765 2770 2775 2780 2785 2790 2795 2815 2825 2830 2835 2840 2845 2850 2855 2860 2865 2870 2875 2880
2885 2890 2895 2905 2910 2915 2920 2925 2930 2935 2940 2945 2950 2955 2960 2965 2975 2980 2985 2990 2995 3005 3010 2015 3020 3025
3030 3035 3040 3045 3050 3055 3060 3065 3070 3075 3095 3110 3130 3135 3140 3145 3150 3155 3160 3165 3170 3175 3202 3205 3210 3220
3225 3230 3235 3240 3290 3310 3320 3340 3410 3420 3455 3465 3510 3525 3655 3680 3700 3760 3800 3885 3940 3955 3980 3990 3995
4035 4045 4080 4095 4110 4135 4165 4175 4190 4215 4220 4255 4280 4295 4300 4330 4340 4395 4397.5 4445 4450 4490 4495 4535 4540 4580
4610 4620 4635 4680 5782.5 5800 5806.5 5820 4695 4710 4735 4780 4785 4815 4820 4840 4845 4852.5 4880 4900 4930 4950 4980 4995 5030 5035
5090 5127.5 5165 5180 5205 5235 5245 5285 5295 5300 5305 5327.5 5335 5385 5397.5 5435 5437.5 5485 5500 5545 5582.5 5587.5 5645 5660 5675 5687.5
5700 5706.7 5725 5730 5740 5750 5760 5773.3 5775 5780 5825 5840 5850 5852.5 5860 5873.5 5875 5880 5892.5 5900 5906.7 5907.5 5925 5940 5950 5955 5973.3 5975 5995
6000 6006.6 6025 6040 6042 6050 6073.3 6075 6100 6106.6 6125 6140 6142 6150 6173.3 6175 6185 6200 6206.6 6225 6235 6240 6250 6273.3 6273.5 6275 6300 6306.6 6315
6325 6335 6340 6350 6362 6373.3 6375 6400 6405 6406.6 6425 6440 6450 6473.3 6475 6500 6506.6 6525 6540 6550 6573.3 6575 6600 6606.6 6625 6640 6650 6673.3 6675
6700 6706.6 6725 6740 6750 6773.3 6775 6800 6806.6 6815 6825 6840 6850 6873.3 6875 6900 6906.6 6925 6940 6950 6973.3 6975 7000 7006.6 7025 7040 7050 7073.3 7075
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7383.3 7391.7 7400 7406 7406.6 7408.3 7416.7 7425 7433.3 7440 7441.7 7450 7458.3 7466.7 7473.3 7475 7483.3 7491.7 7500 7506.6 7508.3 7510 7516.7 7520 7525 7530 7533.3 7540 7541.7
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7658.3 7660 7666.7 7670 7673.3 7675 7680 7683.3 7690 7691.7 7700 7706.6 7708.3 7710 7716.7 7720 7725 7730 7733.3 7740 7741.7 7750
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8066.7 8070 8073.3 8075 8080 8083.3 8090 8091.7 8100 8106.6 8108.3 8110 8116.7 8120 8125 8130 8133.3 8140 8141.7 8150 8158.3 8160
8163.4 8166.7 8170 8173.3 8175 8180 8183.3 8190 8191.7 8200 8206.6 8208.3 8210 8216.7 8220 8225 8233.3 8240 8241.7 8250 8258.3 8260
8266.7 8270 8273.3 8275 8280 8283.3 8290 8291.7 8300 8306.6 8308.3 8310 8316.7 8320 8325 8330 8333.3 8340 8341.7 8350 8358.3 8360
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8570 8573.3 8575 8520 8583.3 8590 8591.7 8600 8606.6 8608.3 8610 8616.7 8620 8625 8630 8633.3 8640 8641.7 8650 8658.3 8660 8666.7
8670.3 8673 8675 8680.3 8683 8690.7 8691 8700.6 8706.3 8708 8710.7 8716 8720 8725 8730.3 8733 8740.7 8741 8750

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Wade, KN4DCO, Orange, Virginia, has worked and confirmed 13 states. Wade uses a Heathkit AT-1. He is in the jewelry business.

Dave, KN2KXP, 345 High Street, Lockport, New York, says he was still able to have his picture taken after that first unforgettable QSO. Dave uses a BC-696 and an NC-57 combination.

Wyoming, Hawaii, Alaska and other hams needing New Jersey for WAS. I operate 40 meter phone and CW. I would also like some pen-pals about the same age. 73, Bill.

Dick Browne, **KN2MES**, 110 Treva Avenue, Ithaca, New York, writes: Dear Walt: I am an advocate of the short CQ. "Fooling around" recently I called CQ just two times followed by my call twice and was surprised to hear W1AW come back to me right on my own frequency (3733 kc.). I have worked 7 states on 80 meters, all confirmed, in two months. I have worked 10 states on 40 meters in 11 days. Greatest DX was St. Louis, Missouri, at 3:30 A.M. The rig is a Heathkit AT-1 and a BC-348-R. 73. Dick.

Larry Mullinix, **KN0APQ**, Peru, Nebraska, writes: I've had my ticket for about two and one half months and in that time I have worked 32 states, mostly on 80 meters. My rig consists of a Viking Ranger transmitter, NC-SW54 receiver and a dipole antenna. I wish everybody would practice with an oscillator before going on the air. I also think the generals should not use more than 75 watts on the novice bands. I passed my general yesterday so you can now find me on any of the bands. 73. Larry. *Editor's Note: Please note that Larry's suggestion to use practice with an oscillator before going on the air is very good. A ham is known by the signal he puts out and unless he puts out a good clean signal no one will talk to him. Do some practicing the old CW first, also CW procedure.*

This letter from Rulon "Rul" Passey, **W7QWC**, 3275 Grant Avenue, Ogden, Utah, is a good example of what we call the "good old ham spirit." Rul says: Reading the Novice Shack in the last few issues I understand that many novices would like a Utah contact and a Utah card. While I was a novice I enjoyed it very much and had many contacts and many good QSOs, which I got a big kick out of. My rig is a Heathkit AT-1 and an S-38-C for a receiver. The antenna is an end-fed 135 feet long-wire. I will try my best to keep any sked, I have plenty of QSLs and will QSL any contact. My bands are 80 and 40 meter CW and I am v-f-o controlled so I can go anywhere in the band. My DX consists of KH6, KL7, VEs and most all of the states. I enjoy the Novice Shack very much, keep up the good work. 73. Rul.

Roland Townley, **KN4BOJ**, Anniston, Alabama, sends a card to say: I passed the general three weeks ago and am still waiting. Age is 17, I am a senior. I work in a television repair shop. I have worked 36 states, VE3 and CM6. Rig is a homebrewed job using a 6CU6 in the final. It runs about 35 watts. I am most active on 40 meters. Receiver is an SX43. The antenna is a 67-foot center-fed zepp. I will sked anyone needing Alabama for WAS. 73. Roland.

Gus Lanata (14), **WN5IYZ**, 1938 Saint Roch Avenue, New Orleans, Louisiana, writes: For the past few months I have been hearing WH6s in the early part of the morning. I think if they would listen to the weak signals they would work something besides KN6s and WN7s. I have worked 39 states, VE3, VE5 and KH6 during the winter months. I run 30 watts to a Heathkit AT-1 transmitter into a Windom antenna 22 feet high. The BC-342 is used for a receiver. I work 40 meters only and would be glad to sked anyone needing Louisiana for WAS especially Delaware for me. I failed the general class theory once. I wouldn't have passed the code but for the help of my "patient" friend, W5YZC. 73. Gus.

Putting a different slant on things is this letter from Richard Williams, **KN2IYN**, 738 Quinton Road, Salem, New Jersey. Dick says: The call KN2IYN will run out this month. Although I haven't been on the air for the length of my license, I thought I would pass along a word of advice to the newcomers to this game. "Don't be like me and get your license before you can afford a transmitter and a receiver." Now I have to work to get my general license and because I haven't had the experience on the air, I can't copy the required 13 wpm. I now have an NC240-D and a 17 watt transmitter. I would like penpals in Italy or Spain (hams especially). 73. Dick.

Chuck Whittington, KN4CEH, Box 169-A, Route #2, Zephyrhills, Florida. Chuck runs 25 watts with a home-brewed transmitter, uses an NC-98. He has worked 16 states and CO2XM on 40 meters.

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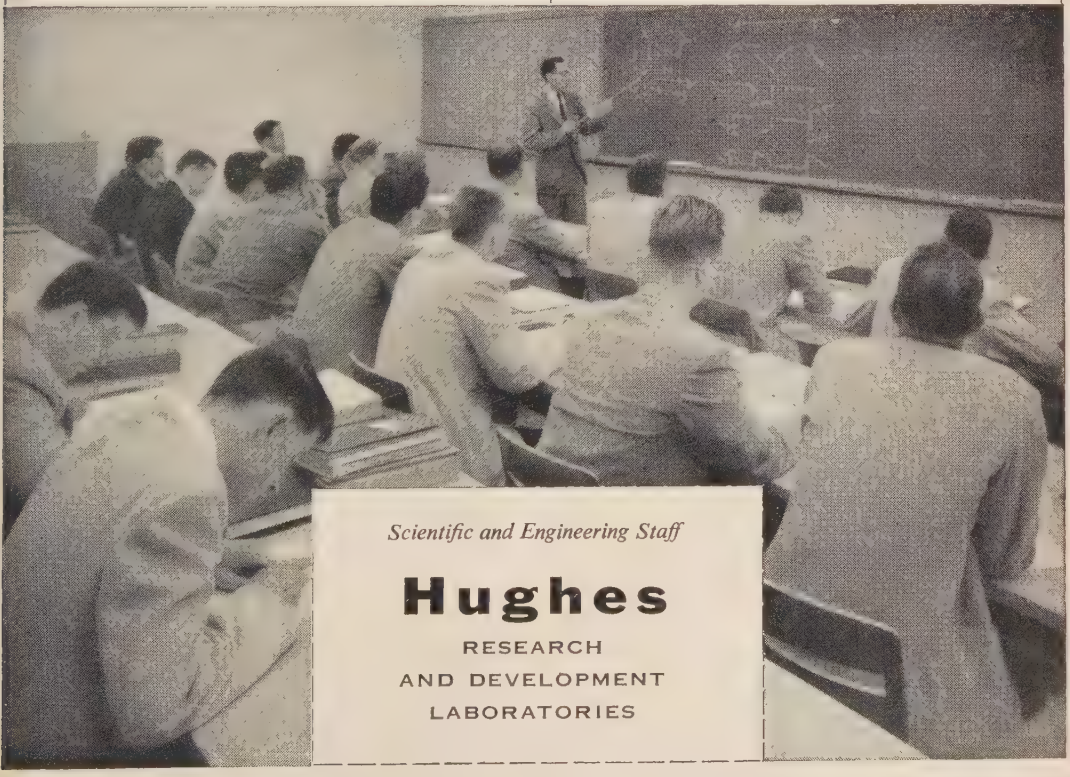

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Bruce Cutting, (13), **WN9MLO**, Delavan, Wisconsin, says: Dear Walt: If there are any novices in W7, W0, W5, or W1 they haven't called me. How about a schedule?

Arlie Hager, **W4HLF**, Orange, Virginia, sent me the following dope. The following are the calls of eight of the nine new novices in the Orange area: My son Bill, KN4DGU, (15), Phil, KN4DCM, (17), Carl, KN4DGT and his XYL Jo. KN4DHD, Web, KN4DCK, and pictures of the following partners in the jewelry business. Wade, KN4DCO, Bert, KN4DCN, and Giff, KN4DCL. These pictures will be used in this column. The QSLs of the eight listed novices are of real historic value, depicting the enormous size of Orange County in the year 1734. They were printed by Carl, KN4DGT.

A nice letter came from Tom Eickelberger, **W1UNA**, Instructor, Industrial Arts Education, Swampscott High School, Swampscott, Mass. Tom says: This spring at Swampscott High School an amateur radio club was formed. Code and theory classes were held and the following six students obtained their novice licenses: Frank Brunot, WN1EVJ, Joseph Francis, WN1EUU, Robert London, WN1ETW, Temple Fay, WN1EUT, Matt Grob, WN1EUY and Dom Spinale, WN1ETL. Other students who are members of the club include: Robert Sherin, W1ZHG, Matt Slobin, W1ZBH and George Morse, WN1BYB. The examiner for the novice licenses was Andy Donovan, W1OGK. Next school term we plan an enlarged program of theory and code classes. 73. Tom.

A letter from Amos Hawkins, **W8INQ**, 4318 Owens Drive, Dayton, Ohio, says: For the benefit of the Technicians on six meters we list the following Southwestern Ohio hams on six meters. W8INQ, W8MCS, W8HOH, W8NEE, W8ZCV, W8PCK, W8HQK, W8WBU, W8QIS, W8SVU (W8SVI?), W8OCR, W8MGJ, W8LPD, W8SDJ, W4TPZ, W8LGI and W8ICJ. Most of these stations can be found on the air every day at 9:00 E.S.T. Most of the above also operate on 220 Mc and can be found there at 8:00 E.S.T. any day. Thanks and 73. Amos.

Al Wessel (14), **KN4DAS**, 6321 N.W. First Court, Miami, Florida, says: In four weeks being on the air I have worked 14 states, CO2QR and VE3DPU. My frequency is 7180 and 7178. It's really rough trying to get away from those foreign phone stations in the 40 meter band. I find that I can work most of my DX around 3:30 A.M., E.S.T., but boy you sure get weary. My rig here is a VIKING ADVENTURER running about 50 watts. The receiver is an SX-24. The antenna is a forty meter half wave doublet 25 feet high. My dad is also a novice, his call is KN4DJA. I would like to make a sked with someone in the Yonkers or Mt. Vernon, New York area. I will answer all letters. 73. Al.

Maurice Snyder (15), **WN3CJR**, 123 South Fairmount Street, Pittsburgh, Pennsylvania, says: I have been on the air for two months and have worked 36 states and a VE2. I have a VIKING ADVENTURER running 50 watts and an HRO receiver. How come I never see any letters from Pittsburgh, Pa.? Some hams around here are WN3ZZQ, WN3BZQ, WN3BDT and WN3BZX.

T-Calls Denied

The petition of Albert J. Balusek (W5SAH) requesting amendment of the Commission's rules to include the letter "T" in the prefix of call signs issued to Technician Class Licensees for the purpose of distinguishing this class of amateur radio station from other classes of amateur radio stations and discouraging unauthorized operation by Technician Class stations in frequency bands allocated for the exclusive use of higher class amateur stations was denied July 6, 1955 by the FCC, for the reason that this would require modification of approximately 12,207 Technician Class licenses, and with the ever increasing work load in the Commission and with the limited personnel available, the administrative difficulties created by the adoption of such a rule would not be justified by the benefits, if any, derived therefrom.

I would like to have some YL penpals. I would al like to wish you good luck as the new novice edit 73. Maurice.

New Novices at Waynesville:

Two of the three tests I have given for the novi license resulted in calls for James Tullis (13), R.F. #3, Waynesville, Ohio. His Call is WN8CZN, he will on 80 and 40 CW after August 15. He will opera portable 5 from New Mexico while on a trip with t Boy Scouts. Jack Gross (12), WN8DNW, R.F.D. # Waynesville, Ohio, was the other call issued June 30t Jack is going to operate 15 meter CW after a Canadi vacation.

Safety

The most important part of the layout of the ne amateur radio station is the provision made for t protection of the personal safety of the operator and h visitors during operation of the station. The transmitt proper should be mounted in a metal cabinet and t entire cabinet and all chassis contained in the cabin should be GROUNDED to a good ground. No met object near the transmitter should be ungrounded. Th includes the metal trim around the operating disk. NEVE change coils without first shorting the coil with grounded wire to make sure that no dangerous potenti remains on the coil.

Help Wanted:

Mike Taylor, (13), 6011 35th Place N.W., Seatt Washington. Telephone: SU-1567. Mike needs help code and theory.

Dick Rudisill, 1421 Harwood Avenue, Orlando, Florid Dick has an SP200 Hammarlund but needs help to g going.

Arthur Towers, (15), 3015 Rawson Street, Oaklan California, needs help in code and terminology.

Ed Blazovsky, (14), 264 Chestnut, Bound Brook, Ne Jersey. Telephone: EL-6-9467. Needs help in code a theory.

Al Hoffmeyer, (26), San Luis Avenue, San Brun California, needs help in code and requirements. Al ha had two years of electronic study.

Sheldon E. McManus, 50 Tremaine Avenue, Kenmo 17, New York. Telephone: Bedford 0734. Needs help code.

Harlan Bercovici, KN0BHT, 3322 North 48 Avenu Omaha, Nebraska. Harlan has been in television servi for four years and says he will help someone in theor and diagrams in return for help in code. He is 19.

Bruce D. Jenkins, (14), 3797 Redman Road, Brockpor New York. Telephone: Brockport 844-f12. Bruce nee help in code and theory, he will answer all letters.

Alan M. Gamse, (13), 5006 Norwood Avenue, Balt more, Maryland. Alan needs help in code and theory.

A. E. Brown, P.O. Box 610, Lafayette, Louisian would like to contact an amateur nearby so that he ca get first hand information on becoming a ham.

Andrew Granett, 627 Mountain Avenue, Bound Broo New Jersey. Andrew needs help in code and theory.

John G. Crosby, 621 11th Avenue, Albany, Georgia John needs help in code and theory.

Robert Good, (15) WN0ZLQ, 1926 South Estelle Wichita 16, Kansas. Robert needs help on the general.

Dave Epstein (16), 18 Dunlop Drive, Saint Catherines Ontario. Telephone: MU 2-6552. Dave needs help wit theory.

Bill Coelho (14), 79 North 26th Street, Newark, Ohi Telephone: DI-4-4204. Bill is interested in SWL but i getting a novice license this fall. He will answer a letters.

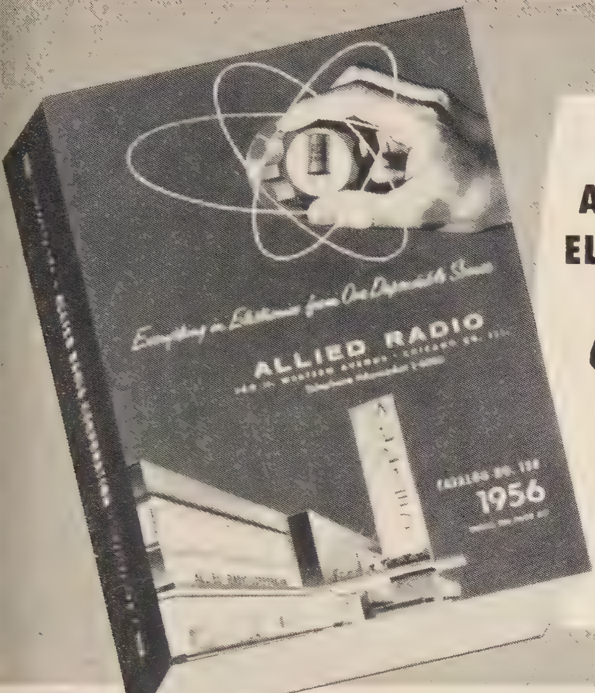
Bruce Ryden, 2646 North Girard Avenue, Minneapolis Minnesota. Telephone: OL 2782. Bruce needs help in cod and theory.

Tommy Tucker (13), 5807 North 19th Street, Arlington, Virginia. Tommy has logged all states and 74 countries as an SWL, he needs help in code and theory.

Frank Gassmere (16), 5501 West 84th Street, Oa Lawn, Illinois. Telephone: Garden 400870. Frank needs some help, especially someone to give him the code test.

Jim Gilbert (14), KN0BFT, Route 1, Excelsior, Minnesota. Jim needs help on the general code and theory.

'Til next month, 73, Walt.



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Mobile Antenna Perfection

[*from page 23*]

Measurements

This is not too easy to do. Right here you need a lot of expensive test equipment or, in lieu thereof, a lot of patience. If you do not have access to the high quality test equipment, you may be forced to test your antenna in "on the air" measurements. These can never be wholly relied upon and depend to a great extent on band "conditions" over an extended period of time. At any rate if you cannot secure high quality test equipment, do not get any. Even the best is not yet good enough in many respects.

Impedance/Efficiency

Many comparative measurements have been made with a representative antenna built in accordance with the data contained herein. Using a General Radio Model 916A bridge, this antenna will exhibit a terminal impedance of 25 ohms. The average mobile antenna employing a coil of poor form factor, and half the Q, and wound on some poor dielectric, will hardly achieve half this impedance. Most will measure 10 ohms or less. At a specified power input level the base current of the 10-ohm antenna will be somewhat less than the base current exhibited by the 25-ohm antenna as measured with a radio frequency ammeter. So there you are, and where are you? You have an antenna power better than twice as great and with same power input. You have just managed get something for nothing and you should pretty good about it.

Feed Line

There are a number of ways of feeding po from the transmitter to such an antenna. Th have been adequately discussed elsewhere a often. A very short length of RG-8/U is c tomarily employed. If longer lengths are u there is always the possibility of running i reactive difficulties. In such cases the best is to use a one-half wavelength line of RG-8/ In any case, the antenna being 25 ohms, th is always the possibility of using two identi lengths of RG-8/U in parallel and coming with a "perfect" impedance match. Handboo should, of course, be referred to for methods feeding. Here we are interested only in havi something to feed.

Follow closely the suggestions contain herein and you can come up with a mob antenna that will enable you to pick 3 db. more, as compared to "just another mob antenna" as a reference. You will discover t communication can be maintained where usual mobile system fails.

Do not be surprised if you cannot succe fully compete with a fixed station on the sa frequency using a kilowatt and a three elem beam. A few kc away from his frequency, ho ever, you will find that you can work nea

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everything that he can. An antenna of this design has been instrumental in working WAC mobile over and over again. It has worked Australia the long way around in the middle of the afternoon, and has worked western Australia, the furtheset point on the globe from the East Coast, the short way around at midnight, right through the West Coast QRM.

Amateur Utopia can be defined as possessing an antenna system capable of working anything you can hear. With this antenna many calls have been answered by stations that were actually too weak to copy. What more can anyone ask for? Careful study of the material furnished herein, together wtih the data supplied by W2FRQ, will pay off handsomely. If you can double your effective radiated power without increasing your power input you can really get something for nothing the easy way.

Ham Club and the Law

[from page 15]

cited where liability could attach to innocent club members to make everyone who is a member of an unincorporated club take a long hard look at the danger.

Here are just a few examples of how liability can attach to you.

A. The club plans a picnic, or a transmitter hunt, or an outing. Someone drives his car recklessly and a stranger gets hurt. If the club is unincorporated, every member could be involved.

B. The club buys a club transmitter. Everyone may become liable for the full purchase price.

C. Someone leaves some equipment in a dangerous condition and an accident occurs. Again everyone may become liable.

The examples could fill a book. It is just not possible to foresee every potential source of danger.

The Remedy

Unlike the partnership or joint venture, a corporation is an entirely new and separate entity and separate and distinct from its members. The general law imposes no liability or responsibility on the individual members for the debts or obligations of a corporation.[4] One member is not liable legally for the acts, negligence or carelessness of another member.[5] This is true even if the corporation is itself liable for the acts of its members. Thus, in one of the examples mentioned above, let us say that on a field day trip, an accident occurs and someone is injured. The person who actually did the act will, of course, be liable. The corporation may be also liable but the other members will not be liable unless they actively participated in the act of negligence themselves.

This aspect of limited individual liability makes the incorporation of amateur clubs highly desirable. More and more clubs are

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70 TERM. POSTS & STRIPS. Builders' special! Asstd. binding posts, screw & lug strips (1 to 10 terms.) Reg. $5. Wt. ½ lb. $1

1500 PIECES SPAGHETTI tubing,. Asstd. sizes, lengths to 4". Reg. $7. $1

75 KNOBS. TV, radio, lab. Some worth 25¢ ea. 15 types; push-on, set screw. Wt. 1 lb. Reg. $8.50. $1

25 CERAMIC & MICA TRIMMERS. Erie TS2A, etc., plus Elmenco mica types. Singles, duals; 12 sizes. Wt. 1 lb. Reg. $16 $1

60 MICA CONDENSERS. Rare bargain! Postage stamp type. 20 values: .00001 to .01 mf. Many silver, 5%. Wt. ½ lb. Reg. $17. $1

10 ELECTROLYTICS. Tubular, EP styles. 8 to 1000 mf. up to 450V. Multiple sections, too! Wt. 2 lbs. Reg. $11. $1

60 INSULATED RESISTORS. 35 popular values; 15 ohms to 20 megs, ½, 1 and 2w. Many 5%. Wt. ½ lb. Reg. $15. $1

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The laws of most states provide for the incorporation of non-profit organizations. The chief difference between a non-profit corporation and a general corporation (organized for profit) is that when qualified as a non-profit corporation, no taxes are involved and in many states not even tax returns are required to be filed by a non-profit corporation.

To incorporate, Articles of Incorporation must be prepared. Since Articles of Incorporation must be drawn to comply with the incorporation laws of the particular state where the club is located, and are, of course, a legal instrument, it is best to secure the services of an attorney to prepare the articles. When filed, they become the basic charter or constitution of the corporation so care should be exercised in the preparation. After the articles are filed, in most states with the Secretary of State of the state, the corporation is in being. An organization meeting is then called when directors are elected, by-laws are adopted and the actual organization of the club activities undertaken.

A corporation has other advantages over an unincorporated club. Some of these advantages are as follows:

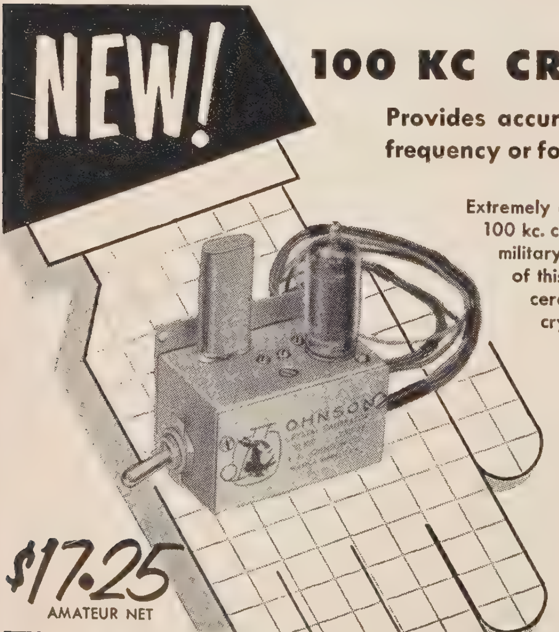
1. A corporation has perpetual life or a fixed term. The life of an unincorporated association is uncertain.

2. A corporation is a legal entity. It can ov property, sue, be sued, buy, sell, or otherwi deal as an individual. An unincorporated a sociation in some states is treated as a pa nership in which title to property must sta in the joint names of the individual membe A partnership normally cannot sue in its ov name, and if suit is brought against it, all the members are necessarily made parties the litigation.

3. Management of a corporation is well d fined. A board of directors, elected by th members, control the activities of the corpor tion. Control of unincorporated associations many cases are indefinite, loose and crea unnecessary internal friction.

The cost of incorporating is very low, th filing fees in most states for the non-prof corporation is under twenty dollars. Attorne fees for incorporation likewise are general very low. It seldom costs each club memb over a dollar or two as his share of the inco poration expenses. After the club is incorpo ated, there are no recurring costs or charge Some states require the filing of an annu information return and others require nothin more to be done.

This article in its entirety is intended simp to point out a source of potential danger. Th laws of your particular state may afford men



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bers of unincorporated clubs specific protection. This is something that cannot and should not be left to guess work. Prudence would dictate that members of an unincorporated radio club should promptly check with a competent local attorney and ascertain the full extent of their personal liability under the laws of the state where they reside. If, as is the situation in most states, the amateur finds that membership in an unincorporated club affords him no legal protection but creates an uncontrollable liability, steps should be immediately taken to incorporate the club.

1. HINDIN, "Certain Legal Aspects of Amateur Radio", *CQ* September 1947, p. 25
   HINDIN, "Skywave and the Law", *CQ* December 1951, p. 40
   HINDIN, "Mobileer and the Law", *CQ* May 1952, p. 35
   HINDIN, "Phone Patch and the Law", *CQ* September 1954, p. 13
2. 25 R. C. L. p. 45; Am. Jur., p. 675; 40 Am. Jur., p. 127ff: 130ff; p. 224ff.
3. 40 Am. Jur., p. 226ff; Annotation 17 LRA 204
4. 13 Am. Jur., p. 544ff
5. 13 Am. Jur., p. 546, 547
6. 13 Am. Jur., p. 157ff

The I's Have It

[*from page 25*]

the lump on his head is two inches high. Another of stockier build, caught in the same situation, was driven into the ground like a tent peg. One fellow's car which was being backed out of the garage has a roof now capable of performing extra duty as a washboard.

As usual, Dan was blamed, but with an assist from the local TVI committee he has been cleared of all responsibility. The door opener manufacturer paid all damages and refunded their price to all purchasers, although he let everybody keep the gadgets because he never wanted to see them again. Dan is in everyone's good graces because he was able to alter the response of the openers so they now work as they are supposed to. Let this be a warning to beware of GDI. (This term (GDI) is often loosely applied by radio amateurs to all types of interference, but actually is properly used only in connection with garage door interference.) The immortal Wordsworth once said, "All paradise could, by the simple opening of a door, let itself in upon him" but that was before that miracle of modern science, the electronic garage door opener. Nowadays, the opposite can happen.

The last part of this learned discussion, which deals with MAI, or model airplane interference, is in the nature of a scoop for this chronicle. The explanation of events that took place on a hectic day last June at Azalea Air Force Base in Minnesota has not been heretofore disclosed. To establish the setting a little background information is necessary. The Air Force, to foster youthful interest in aviation, had agreed to sponsor a model airplane meet at Azalea. Several airlines and aircraft companies had donated prizes for the occasion. During the long

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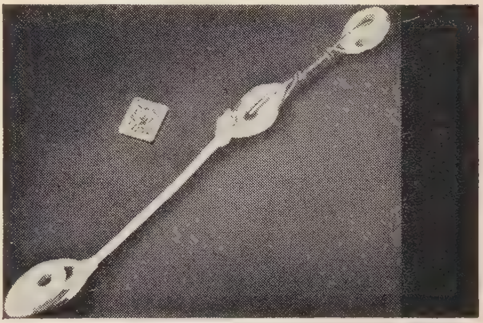

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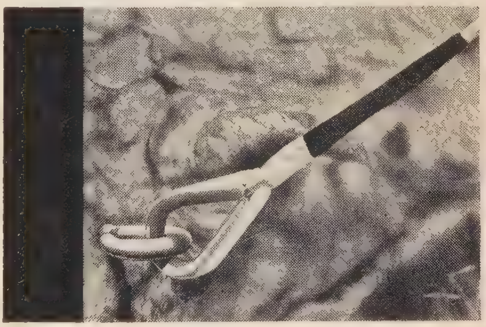

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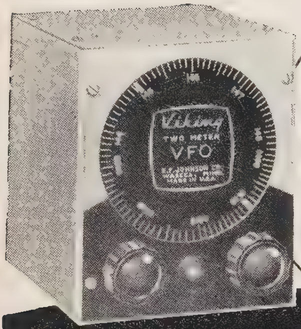

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winter months, the model airplane builders had been readying their latest creations for their favorite classes of competition. The thing that set the Azalea meet apart from all others though, was an extra special event which had been established, the RCA or radio controlled acrobatics event. The winner of this event to be the individual or group entry performing the best precision acrobatics. Those in the know in model airplane circles figured the prize was in the bag for the "Blue Devils." The "Blue Devils" consisted of four identical models controlled from a single operating position. As may well be imagined this entry usually stole the show.

One of the problems to be coped with at model plane meets is tracking down runaway models and to take care of this the local mobile radio club had volunteered its services.

Well the big day had finally arrived and the events of the morning had all been run and now everyone was about to see the feature event, the radio controlled models. Suddenly four little engines whined and four blue streaks leapt skyward climbing almost straight up, then over on their backs for a second as they went from this position to a more normal one by means of a snap roll, all the time maintaining perfect formation. Then pandemonium broke loose as the formation dove straight at its control station. The operator, to his credit, remained at the panel till the last instant, but in the haste of his getaway knocked it from the table smashing it to bits. The models scattered to the four winds. One did three outside loops, an Immelmann and dove into a nearby lake, but after a hundred feet of submarine locomotion again pulled into the air and whizzed by the grandstand with three surprised catfish peering from the windows of its cabin like Senators on a junket. Another took to the hills and after chewing the tail feathers from a bald eagle settled in her aerie and in a short time became a mother.

The third plane during this time had been climbing in a corkscrew spiral, now suddenly it changed course and power dove through the open door of a big hangar, streaked out the other end, whizzed by the judge's stand, did three tight turns around the control tower, came down to a few inches from the ground and plowed a furrow along the grass between the runways before it nozed over and burned to ashes.

The fourth plane was last seen heading due north and no one to this day knows for sure what happened to it, although various foreign radio stations later announced the sighting of an unidentified guided missile.

The only other contestant, who had the gumption to compete against the "Blue Devils" was a fellow named George and quite naturally he won by default. The prize was an all expense tour to Paris for two by airline.

Oh yes, I almost forgot to mention, George had a novice license and operated his model on 144 megacycles rather than the customary 27.250 megacycle frequency, which the FCC has allocated for license free model airplane control purposes. It also so happened that George's dad, who accompanied him on the trip, had witnessed his son's surprise victory. The old man had been operating a mobile kilowatt on eleven meters from his panel body radio repair truck which was parked in the center of the field at the time.

So there you have some dope on what can happen from interference you may create. I could go on and tell you of some of the rarer, more exotic types of interference, but I haven't the time just now. The XYL tells me that I have been modulating the telephone and I have to get it straightened out.

Propagation

[*from page 63*]

This overall picture of band conditions is intended to indicate qualitative changes in each amateur band from month to month. For specific times of band openings for a particular DX circuit refer to the *CQ Propagation Charts (DX)* on the opposite page. For short-skip openings on the various amateur bands refer to the following *CQ Propagation Chart (Short-Skip)*.

CQ Propagation Chart (Short-Skip)

Band (Meters)	Distance (Miles)			
	50-250	250-750	750-1300	1300-2400
10	-	-	1200-1800 (1)	1200-1800 (1)
15	-	-	1200-1800 (2)	0800-1900 (3)
20	-	0800-1600 (2)	0500-0800 (2) 0800-1900 (5)	0700-2100 (4)
40	0900-1200 (3) 1200-1700 (4)	0700-2100 (2) 2100-0700 (2)	1800-0700 (5)	1800-0700 (4)
80	0600-2200 (4)	1800-0800 (4)	1900-0700 (4)	1900-0700 (3)
160	1800-0600 (5)	1900-0600 (4)	2000-0600 (3)	2000-0600 (3)

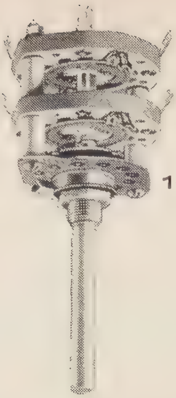
The above *Chart* is based upon a CW radiated power of 75 watts, using a dipole antenna a half-wave length above ground. Calculations are based upon a latitude of 38 North which passes through the approximate center of the United States. Actual band conditions in other areas of the United States should not vary more than an hour or so from those predicted in the *Chart*. The hours of day that skywave propagation conditions will be optimum on a particular band for a certain path distance are given in *Local Standard Time*. The symbols for the number of days that the path is expected to open are the same as those appearing on the *DX Chart* on the opposite page.

Sunspot Cycle

This month's forecasts are based upon a predicted smoothed sunspot number of 25 centered on September, 1955. A more complete discussion of the present sunspot cycle follows in the Review Of Shortwave Propagation Fundamentals.

Review of Shortwave Propagation Fundamentals (Con't)

The daily and seasonal variations in the ionosphere have been discussed previously. Last month we discussed sunspots, the 11-year sunspot cycle and the fact that there is a direct correlation between the eleven year sunspot cycle, the general level of ultra-violet ray intensity and the degree of ionization of the various layers of the ionosphere. The influence of the eleven year sunspot cycle upon shortwave propagation can be seen from an exam-



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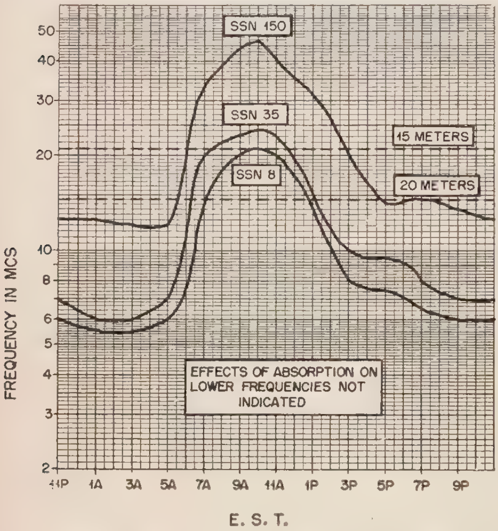
ination of *Fig. 1.* This is a circuit analysis curve for a circuit from the East Coast, USA to Southern Europe during the maximum of the past sunspot cycle (sunspot number 150), during the minimum of the past cycle (sunspot number 8) and for December, 1955 when the sunspot number is predicted to be approximately 35. During the peak sunspot activity, the monthly median value of *Maximum Usable Frequency* for December, was approximately 46 megacycles. Since daily variations of up to 15% from the monthly median values are not uncommon, this would indicate that trans-Atlantic openings on the amateur six-meter band might be expected on some days. Actually this was the case as during December, 1947, numerous trans-Atlantic six-meter openings were reported. As solar activity decreases, the value of the Maximum Usable Frequency on a particular circuit also decreases. During December, 1954 when solar activity was approaching the minimum value of the cycle, the MUF on this circuit had dropped to approximately 21 megacycles, or slightly less than half the value observed during the peak sunspot activity. In general, the values of MUF on a particular circuit during sunspot maximum are about twice the value of MUF during sunspot minimum and the decrease in MUF between sunspot maximum and sunspot minimum is approximately linear.



It appears quite certain now that a new sunspot cycle began during May of 1954 and we are now in the early phases of the new cycle. As the sunspot numbers continue to increase, shortwave propagation conditions on the higher frequency bands should steadily improve. *Figure 1,* the circuit analysis curve for sunspot number 35 shows the predicted MUF for December, 1955. In comparison to last year (SSN 8) it can be seen that both the 15 and 20-meter bands are expected to open more often, and remain open longer this December than was the case last year.

Figure 2 shows the complete sunspot cycle which came to an end during April, 1954. This sunspot cycle has been officially recorded as the 18th cycle. It is interesting to note that the maximum of the 18th cycle, reached during June, 1947 with a smoothed sunspot number of 157, was the highest recorded since 1778. The minimum value of 3.6 reached during April of 1954 was one of the lowest values recorded. The new 19th sunspot cycle began in May, 1954 with a smoothed sunspot number of 3.6. By November 1954 it had risen to 9.5. This is the most recent smoothed sunspot number recorded. Remember that the smoothed sunspot can not be determined until six months have passed because this number takes into account all monthly average sunspot numbers for a period six months before and six months after the month for which the smoothed number is calculated.

[Continued on page 109]

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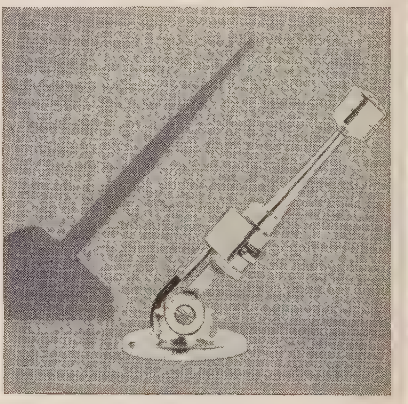

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How fast will the new sunspot cycle increase? This is a very difficult question to answer with any degree of accuracy since the physical laws which govern sunspot activity are not yet known. While predictions of general sunspot activity several months ahead may be made with fairly good accuracy using certain statistical methods, any long term prediction, especially at the beginning of a new cycle, is not much better than mere conjecture. With this warning we shall see what we can conjure. Using an average curve derived from the curves of the previous 18 cycles as a basis, we can say with a fairly good degree of accuracy that the ascending portion of the sunspot cycle is considerably steeper than the decreasing part and while the initial rise is slow—once the numbers start going up they usually go up quite fast. Our average curve rises from a minimum to a maximum in a period of about four and a third years. The average curve gains 10 numbers the first year and then about 3 numbers a month for the next two years. The *predicted* portion of the 19th sunspot cycle appearing in Figure 2 is based upon the average curve of the previous 18 sunspot cycles. From observations made during the previous cycle it appears that once the smoothed sunspot numbers rise above 50, short wave propagation conditions improve rapidly. It would appear therefore that we are less than a year away from considerably better conditions on the higher bands.

The normal variations in the ionosphere have been reviewed. These variations are the *daily variation* as a result of the twenty-four hour rotation of the earth about its axis, *seasonal variations* as a result of the earth's relative positions with the sun and the *sunspot cycle variation* as a result of sunspot activity on the face of the sun.

In our next discussion some of the abnormal variations in the ionosphere will be described. Among these abnormal variations are ionospheric storms, aurora activity and the formation of sporadic E layers.

I want to thank those readers who sent me their monitoring observations made during the eclipse of June 20th. The reports are now in the process of being evaluated and will be discussed in a future column.

I also want to again thank Mario, I1ER and Norman, G3CEU as well as all the other readers who continuously send me summaries of reception each month. A comparison of actual reception conditions against the predicted conditions permits modifications to be made in the forecasting techniques and results in a more accurate forecast. Reception summaries may be sent directly to the Propagation Editor.

Since October is traditionally DX Contest time, next month's column will be devoted to a special DX Contest forecast.

Operating From Bed

[*from page 44*]

The final step in constructing the table is painting. I first sealed the pores of the wood with a coat of flat white primer. Then I applied two coats of semi-lustre enamel, allowing a minimum of twenty-four hours between coats. Although it may be unnecessary, it might be well to stress the desirability of using a paint especially designed for tables and similar surfaces subject to hard usage.

Bringing Power To The Table

Power to operate the equipment on the table is brought from the nearest a-c outlet, by means of a well-insulated, husky, yet flexible, extension cord, to a fused multi-connector outlet fastened to the side of the table. This reduces the number of dangling cords to a minimum.

Actually, the problem of wires from the table is easy to solve, as long as flexible, low-impedance antenna feed lines are used. They can usually be draped around the room, or suspended from the ceiling, without any serious loss in operating efficiency.

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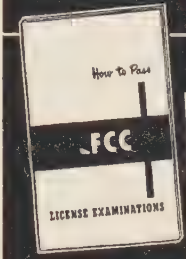

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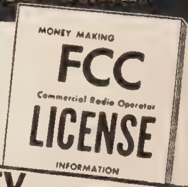

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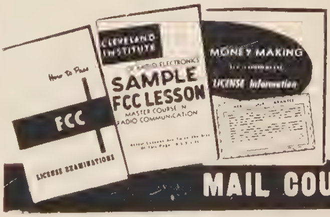

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[*from page 38*]

operated a 400-mile circuit on 1046 Mcs and an experimental commercial link has been set up between Minorca, Spain and Sardina, Italy on a frequency of 300 Mcs. Both are islands in the Mediterranean Sea separated by 240 miles. The transmitter used on the circuit has a power output of one kilowatt and a 33 foot diameter paraboloid antenna is used for transmitting and receiving. Another link in the 890 to 900 Mcs band has been established between Nutley, N.J. and Southhampton, N. Y., a distance of 91 miles. Transmitter power is one kilowatt and 28-foot diameter paraboloid antennas are used for receiving and transmitting.

What appears to be the present frequency limit for radio communications has been reached by the University of Texas where a successful circuit has been set up over a distance of about seven miles on a frequency of 70,000 Mcs or a wavelength of 4.3 *millimeters.*

Ionospheric Research

Practical use is made of ionospheric data by converting this data into circuit analysis information used for the establishment of a successful radio circuit. The success of many circuits depends on the ability to forecast or predict ionospheric conditions from presently available data. Considerable research continues in the field of improving ionospheric forecast techniques—that is improving methods for determining when certain frequencies will be usable on a particular circuit, as well as being able to accurately forecast good or disturbed propagation conditions for the shortwave bands.

The National Bureau of Standards has completed a study to ascertain the reliability of various methods now used for forecasting radio propagation conditions for radio circuits transversing the North Atlantic Ocean. As a result of this study a new method of forecasting has been developed which appears to give results as good as or better than present methods. The Bureau of Standards is also experimenting with oblique angle pulse transmissions for determining the actual maximum usable frequency on a circuit contrasted to the classical method of vertical incident measurements converted to maximum usable frequencies by a mathematical process. The new method permits a more accurate determination of propagation conditions on an actual circuit than does the classical method.

From present research being conducted in the field of propagation forecasts and practical use of propagation data it appears that future shortwave radio forecasts will be more accurate than the excellent present day forecasts.

Our knowledge of the influence of *meteors* upon the ionosphere has been increased as a result of recent research at Stanford University. Meteors are at least partially responsible for producing ionization at the E-level in the ionosphere. It is this meteoric ionization that is believed responsible for some degree of scattering of VHF signals well beyond the radio horizon. Ionization from meteor trails appears also to be one of the several factors responsible for the formation of the sporadic-E layer which results in the summer time short-skip openings on 10 and 6 meters.

Whistlers

"Whistlers" continue to be of considerable interest to researchers in the field of ionospheric propagation. First reported in 1953, this term denotes an audio frequency phenomena believed to be caused by certain propagation mechanisms. Whistlers can be heard by means of a sensitive *audio amplifier* connected to a long wire or loop antenna. They resemble a rough whistling tone, with varying degrees of "musical quality" which descends in frequency from several kilocycles to a few hundred cycles in an interval of about one second. There are indications that certain types of whistlers are associated with auroral displays and that other types are associated with lightning discharges half way around the world at the antipodal point. It is believed that whistlers may become a powerful new tool for the study of ionospheric propagation.

The International Geophysical Year

The Geophysical Year is a year set aside about *once in a life time,* during which it is intended that intensive scientific investigations throughout the world will be conducted on a co-ordinated basis for obtaining data concerning aurora, cosmic rays, geomagnetism, glaciology, ionospheric physics, meteorology, seismology, gravity, solar activity, latitude and longitude, oceanography, and rocket exploration of the upper atmosphere. The problems and the cost of international arrangements for world-wide observations of this type are imposing. Consequently, only twice in the last seventy years has a Geophysical Year been observed. A third such Year is scheduled to be held from July 1957 to December 1958. The United States is planning to take an intense interest in the scientific program being planned for the Year. Thirty-two other nations have already signified their intention to join in this International Geophysical Year and many others are expected to join. With sincere international co-operation, it is hoped that during the International Geophysical Year, significant advances will be made toward increasing our knowledge of geophysical phenomena. As July 1957 approaches I am sure that we shall be hearing a lot more about the International Geophysical Year, and the part that amateurs may be able to play in it.

While to many amateurs the phrase of thirty years ago that "200 meters and below—signals will never get out of the back yard" still seems fresh in mind . . . today's radio horizons seem almost unlimited.

George Jacobs, W3ASK

YLRL CONVENTION

[*Continued from page* 50]

another lad interested in the same hobby. Incidentally, after 39 years of exposure to Ham radio, Gertrude had passed her Novice exam at Ft. Worth during the West Gulf Convention the previous week and was awaiting her KN6 call!

Maxine, W6UHA, who had taken her FCC exam from Mr. Linden in 1941, took great pleasure in presenting him with an orchid lei, together with the Hawaiian custom of a kiss on each cheek—which was returned to Maxine with equal fervor! Vada, W6CEE, honored K6BJ with another orchid lei and similar greeting—to the delight of all present.

Numerous gifts had been sent for the convention from YLs and OMs elsewhere in the country, as well as many gifts donated by radio companies and by the L.A. club members. Most of these were raffled (to help pay the convention expenses). Main door prize drawing, held at the very end, was won by W6JZA, Elsa—a Hallicrafters SX-99 receiver—happy gal!

Also attending the Saturday activities, but eluding the photographer, were W6s NZP, SHR, QOO, AYJ and IWG.

Tours

Not enough YLs signed up for the chartered bus tour on Sunday, so this was cancelled. However, a group of YLs toured by car, visiting L.A. YLs and ending up at W6CEE's for an evening of singing and dancing. Monday a mobile caravan traveled to CBS TV City. About 35 YLs made the tour through the studios and saw Art Linkletter's House Party and the Bob Crosby Show. Luncheon was enjoyed at the Farmer's Market.

So, now it is history—the First International YLRL Convention. To each and every one of the YLs who worked so hard to make the convention the tremendous success it was, our grateful thanks.

Our thanks also to W6LBO, Mary; her OM, W6EJL, and son Jimmy for their hospitality in putting up the W5RZJ entourage. And to W6LBO, CEE, UHA, QOG, NZP and the other YLs for their help to us in covering the convention. To W6GAU our thanks for the convention photographs. Incidentally, if you would like copies of any of the photos, 8 x 10 glossy prints are available for $1 each. Identify the photos you wish and send orders to W6LBO, Mary.

W6CEE and the Los Angeles YLRC have paved the way with the first convention. Surely its success will inspire future ones. Where and when will be the next?

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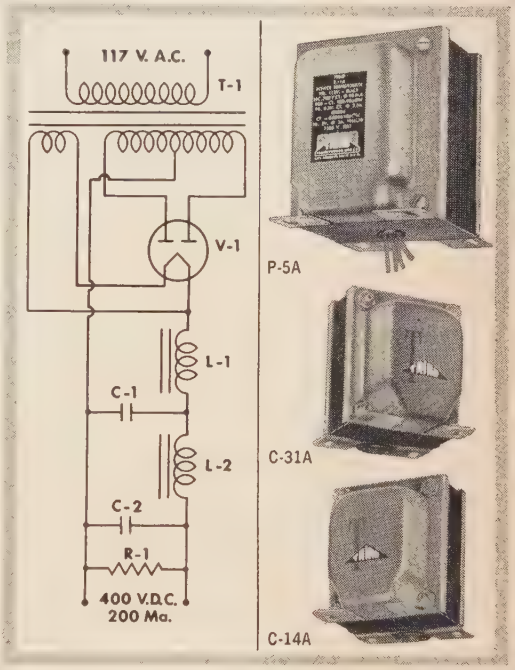

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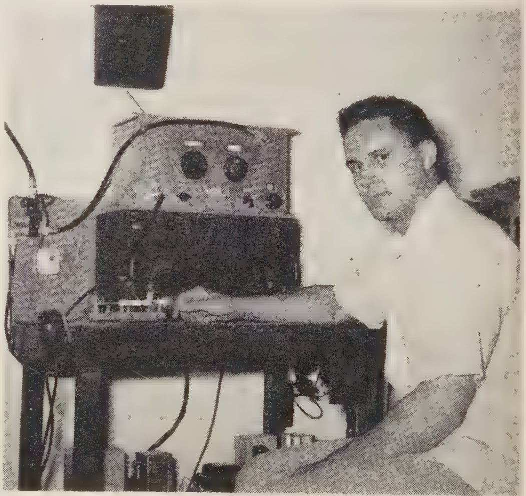
[*Continued from page* 77]

the indian sign on HV3UWB who has been claiming to be in Vatican City. . . . XE1MJ wishes it known that he is on from 0300 to 0600 GMT daily for European, and other DX, contacts. He is VFO and runs a KW to a beam on CW. . . . W6VSS nabbed ZC3AC at 1500 GMT, 14132. . . . K2GMO keyed with FD4BD on 14024 at 1700 GMT. This may be ex-FD8AB who has been expected on the air under the FD4 prefix. . . . Via W6YY we are told that VS2DQ will go to Christmas Island, ZC3, after his holiday in England. Boats call at Christmas about once a month and the island contains man-eating land crabs measuring as much as ten feet across! . . . Bari, VR2BZ, plans short DX'pedition to Tonga, VR5, in the very near future. VS4CT will remain in Sarawak, one-half mile from the Brunei border, until the middle or end of August, depending on the weather. He will then spend six to eight weeks in ZC5-land. Operation at Brunei again is also a possibility. . . . VS1CZ states that Chhawna, AC5PN, will start operating from Bhutan at the end of July. AC4NC is away on vacation (7/28/55). AC3PT operates spasmodically on weekends only. If you treat Wyn, VR2CG, nicely he might fix an FW8AB CW sked for you. FW8AB should have received his replacement HV xfmr by now.



CN8EL, Sidi Yahia, French Morocco, is operated by Bob Morris, USN. Bob is ex-W3IFR of Philly. The transmitter runs 35 watts on CW and 25 on phone to a VFO/6AG7/807 combo. Antenna in a ground-plane and receiver is a "surplus" BC-342-N. Bob is on most evenings between 1900 and 2200 GMT and works the states consistently.

International Amateur Radio Communication

The FCC has been notified by the Dept. of State that Laos no longer prohibits amateur radio communications. This modifies public notice of April 28, 1954. The revision of that notice will be issued at an early date.

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VHF

[*Continued from page* 69]

switching arrangement are:

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Rex innocently (I thought) inquired why I didn't use a Dow coax relay which same he just happened to have in stock. My reply was the usual answer given to low frequency men who just don't understand the mighty technical problems encountered in operating in the VHF region. i.e.: right angle bends make standing waves, leakage on coax relays is always too high, constant impedance connectors not used, etc. etc. Olde Rex denied any knowledge of these things but why didn't I try one for a few days and let him know all the answers? And just in case I worried about standing waves, why didn't I borrow this SWR bridge he just happened to have and by the way had I noticed that the Dow coax relay not only unhooks from the receiving feedline but at the same time a silver plated barrier is placed across the opening to the receiver coax. This barrier grounded to the coax ground and completely disconnected from the center lead. After a few demonstrations with an ohmeter I was almost convinced but I still like type "N" connectors and it was kind of foolish to measure SWR unless the relay was equipped with them. Well of course Olde Rex realized that a learned fellow like me would know better than try it but why didn't I make some measurements for him so he could talk with authority on the subject? Meanwhile of course he would get a relay equipped with constant impedance connectors and I could try that too. Which we did. I am now the proud owner of one Dow coax relay with standard connectors, one Dow coax relay with type "N" connectors, one Jones micromatch, one ninety foot Kuhne tower, three Valpey crystals (ground to special frequencies), forty-two Gaybar strain insulators and other articles too numerous to mention. I understand about the Dow relays because they did everything Rex said they would, furthermore they didn't introduce any standing waves on the line and they didn't leak any measurable signal into the receiver. And it's true that the Jones micromatch does measure the SWR at 144 mc. as a matter of fact it works on 220 mc. too. But all that other stuff? Hm--m-m

Visits: *Future*

We've been invited to attend the Post Contest meeting of the Ontario—Western New York VHF Association. This meeting is held in Oakville, Ontario, Canada on September 24th. Full details of the get-together can be obtained from Les (VE3AIB) or Tony (VE3DIR). The XYL and I will both be there. Hope to see you then.

. . . DE K2ORS

[*Continued from page 11*]

sas. And he welched to the FCC. With the crystal plugged in, I was logged on 46 frequencies. But that was the only thing my old Bliley BC-3 could contribute to the cause. Flagpole sitters were a rum lot anyway. Even with the key up, I got an S6 from a Panamanian freighter off the coast of Greenland. I snagged an SWL card from a guy who logged me while he was trying to copy EAQ on the 25 meter band. He said I put in a better signal on 25 at his QTH in Sydney than W8XK. He also said my programming was better. At the time, W8XK was featuring Pick and Pat so I lay this snide remark to traditional British Colonialism and the doctrine of "The White Man's Burden." That rig was a good start in the direction of solving the age-old academic problem of perpetual motion. When I turned the a-c power off, I dropped only two *S* units in San Diego on the police frequency, but the RI later said that this was due to a high line noise level at the receiving end. I finally had to bury those two 6L6's in moist loamy ground a quarter wave deep (49 Mc) wrapped in All Purpose Reynolds Wrap cut to the frequency. And even now when the QRM drops off among the press freqs down around 11 Mc on quiet winter nights a knowing listener can hear the low raw a-c note with the characteristic chirp that can mean only one thing. Those two benighted bottles are still carrying on in the old tradition. It kind of makes me feel warm inside to know that I have contributed something, however small, to the cosmos. Which isn't quite what I had in mind at the time but after the FCC had restored my license on a probationary basis and I was again allowed to operate on a strict supervised fifteen minute per day schedule on 144 Mc. only (ICW), I began to take a broader view of the affair. Today the RI and I have many a laugh over a glass of stout about whole thing. He's even been able to talk the "Front Office" into giving me an extra half hour per day on the band. I guess with the new administration things are easier all around.

These days I am engaged in writing my memoirs and really don't have much time to putter about the "shack" as we used to call it in the old days (see cover). But from time to time over a quiet pipe and with a few novices gathered at my knee I find myself recounting the tales of the exciting pioneer days when our only contact with the outside world was the latest *Allied* catalog which was always placed lovingly alongside our precious copy of the last issue of the *Johnson & Smith Mammoth Novelty Book*. Needless to say, both were well thumbed as well as index-fingered. Occasionally these youngsters, while munching the cookies my XYL always provides for them, will ask me "how did it feel to live in the Olden Dayes?" and I find I can't really answer them. . . .

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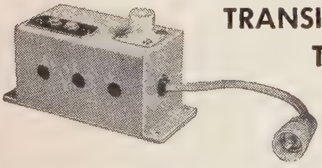

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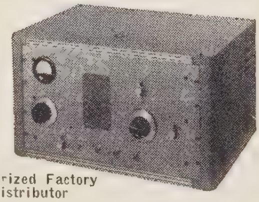

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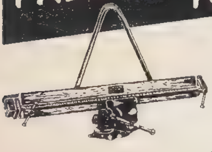

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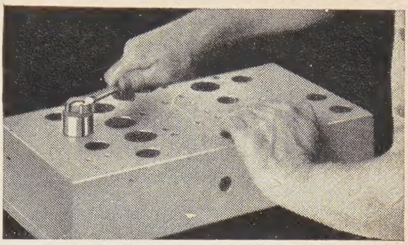

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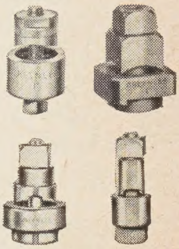

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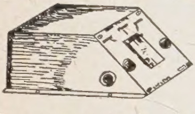

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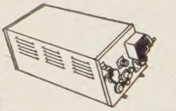

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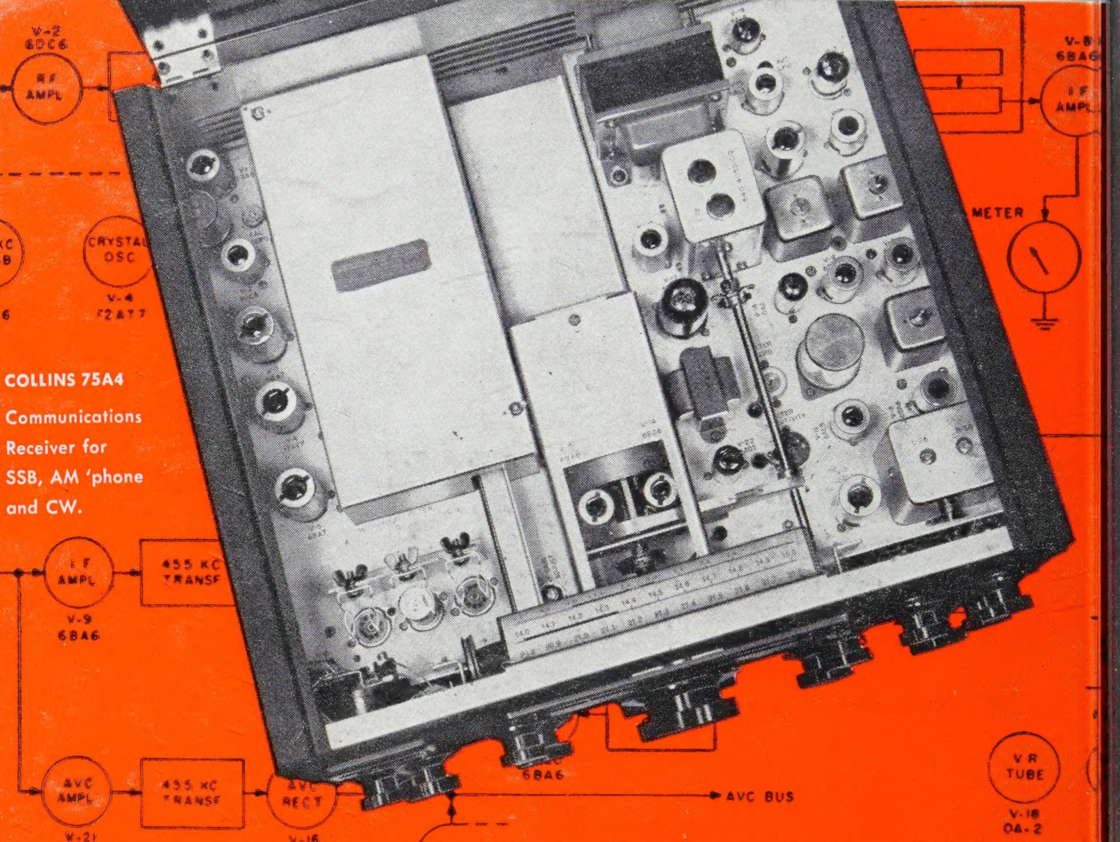

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